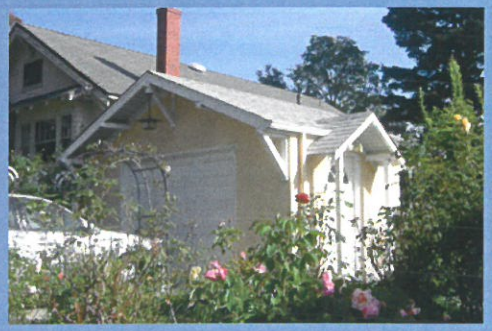
EXAMPLES ONLY. NOT FOR CONSTRUCTION.

GROWING SANTA CRUZ'S NEIGHBORHOODS FROM THE INSIDE



ACCESSORY DWELLING UNIT GARAGE CONVERSION MANUAL

SANTA CRUZ, CALIFORNIA

Due to the changes in the Zoning Ordinance and the California Building Code, these publications and drawings have been provided to serve as examples of typical Accessory Dwelling Unit layouts, and not as construction documents.

CONVERSION ISSUES Introduction to ADU development and how to start your project

NEIGHBORHOOD FRIENDLY DESIGN Neighborhood compatibility and privacy

INTERIOR AND EXTERIOR SPACES Designing your garage conversion project

SAMPLE PLANS Eight types of garage conversions

www.ci.santa-cruz.us/pl/hcd/ADU/adu.html

Prepared by the City of Santa Cruz • 2006
Funded by the California Pollution Control Financing Authority
Sustainable Communities Grant and Loan Program

Foreword

Although challenged by growth pressures associated with increasing enrollment at the University of California at Santa Cruz (UCSC) and the attractiveness of Santa Cruz's proximity to Silicon Valley, the City of Santa Cruz endeavors to maintain a small town atmosphere, distinguished by a diverse community and encircled by the natural beauty of a greenbelt. By necessity, infill-housing opportunities are a critical part of the City's approach to providing new affordable housing choices. Accessory Dwelling Units (ADUs) are one way for the City to provide more rental housing as well as making home ownership more affordable. With each new ADU, the overall stock of rental housing increases and with the added rental income, a homeowner might more easily afford their home.

However, the community has expressed concerns about the effects that this form of infill housing might have on the neighborhoods. So, with funding from the California Pollution Control Financing Authority (CPCFA) Sustainable Communities Program, the City of Santa Cruz has implemented a program to help homeowners develop ADUs that are sensitive to the surrounding neighborhood, contributing, rather than detracting, from the Santa Cruz community. This *Garage Conversion Accessory Dwelling Unit Development Manual* is part of that program. Information on other aspects of the program is also included in this Manual.

The purpose of the Manual is to assist homeowners with the process of developing a Garage Conversion ADU. The Manual includes relevant zoning, design issues and opportunities, and showcases eight prototype designs.

For a more information regarding other types of ADUs, please refer to the Manual's companion volume, the *Accessory Dwelling Unit Manual* and supporting *Development Program Prototype Plan Sets* prepared in 2003.

Accessory Dwelling Unit
GARAGE CONVERSION MANUAL



INTRODUCTION

Santa Cruz's coastal setting, hospitable climate, easy-going lifestyle, and university-town status all contribute to its desirability as a place to live. However, this desirability translates into a high demand for affordable housing. The City has implemented policies and developed resources encouraging Accessory Dwelling Unit (ADU) development, resulting in unprecedented national recognition from professional organizations and government agencies. This manual is meant to be a companion to the City's 2004 Accessory Dwelling Unit Manual, with a special focus on innovative ways to covert garages on single-family lots into housing.

Sizing up the Opportunity: Is a Garage Conversion Right for You?

The motivation for converting a garage into an ADU typically involves some combination of spatial and economic needs. By understanding the configuration of your lot as well as the City's planning and zoning regulations, you can best determine how to convert that garage into a well-designed and attractive living space.

Who is the Unit For?

ADUs, by their nature, appeal to people for different reasons. Some homeowners may want or need the added income from a unit to help pay for the mortgage. Others might want to make sure their children or parents have a place to live. Whatever the reason, you need to consider both the needs of yourself as the homeowner and the tenant. This will influence your approach to private and shared yard spaces, shared or separate metering of water and electricity, and other issues that affect the quality of daily life. This manual walks you through these issues and provides ideas for how to make your ADU and existing house compatible.

Zoning Basics

The City of Santa Cruz views ADUs as an important resource for expanding and diversifying the housing stock. In order to implement this vision, the City has passed one of the most progressive and flexible zoning ordinances in

An Accessory Dwelling Unit (ADU) is an additional, self-contained housing unit that is secondary to the main residence. ADUs are sometimes referred to as "Granny Units" or "Mother-In Law units" since many ADUs were initially constructed to provide for family members. Converting a garage can be a cost effective way to build an ADU.

ADU Zoning Standards

California Building Code
Bedroom: 70 SF Main Room: 120 SF Efficiency Apt. Room: 220 SF
Min. Bedroom Width: 7 Ft.

In communities that are mostly built-out, ADUs provide a way to add needed housing utilizing existing infrastructure.

Zoning Code for ADUs	Typical R1-5 Requirements*	Exceptions/Comments
Minimum lot size	5,000 SF	NO exceptions.
Maximum unit size for lot up to 7,499 SF	500 SF	7,500-9,999 SF lot can have 640 SF ADU. 10,000 SF+ lot can have 800 SF ADU.
Side yard setback, one story	3 feet	5 feet for 2 story ADU.
Side yard setbacks, one story, on a corner lot	8 feet	8 feet for 2 story ADU.
Front yard setback	20 feet	ADU can built in front of the main house as long as required setback is maintained.
Rear yard setback, one story only	3 feet	20 feet for 2 story ADU without Administrative Use Permit.
Maximum height*	13 feet to mid roof**	22 feet to roof peak for 2 story ADU.
Minimum distance between habitable structures	10 feet	6 feet between habitable and non-habitable structures (sheds, garages, etc.)
Maximum rear yard coverage	30% of 20 foot setback	Not required if facing alley.
Parking spaces	1 space per ADU 2 spaces for house	Assumes 1 bedroom ADU and 3 bedroom house. More bedrooms need more spaces.
Covered parking	None	Building an ADU eliminates required covered parking for lot.***
Parking location	Up to 3 cars can be parked in tandem in driveway. Up to 3 spaces allowed in front yard (maximum of 50% front yard may be paved).	
ADU entrance, main windows and entry	May be oriented towards main house but not towards neighbor's property	
ADU exterior	Must relate to main house in building materials, roofline and other details.	
Notes: * Typical requirements for an ADU located in R-1-5 zone (check Zoning Code for your lot) ** Maximum height is measured to midpoint of highest gable. *** This facilitates converting a garage into ADU		

California when it comes to creating ADUs.

One of the initial tests for your property is to determine whether it is eligible for an ADU. In Santa Cruz, a single-family lot (with R-1 zoning) has to be at least 5,000 SF to accommodate an ADU. A 5,000 SF lot in Santa Cruz can have a 500 SF ADU. Most garages are less than 500 SF, and are therefore eligible for conversion if they meet the other standards. In particular, the garage has to be located at least three feet from the side-yard neighbor's property line and three feet from the rear-yard neighbor's property line or alley. If your garage is built on the property line, this may require you to move the exterior wall three feet to be in compliance.

No matter what kind of ADU is developed, the property owner must live at the same address and only one ADU per single-family lot is allowed.

Where Do You Park?

If you convert your garage to an ADU, then where do you park? The City has lenient parking requirements that are meant to be an incentive for converting garages. For a three-bedroom house and an ADU, the City requires three parking spaces on the property. They can be located in the front (up to 50% of the front yard can be paved) and they can include tandem spaces. So, when you look at your property, think about where you might park three cars and how that could affect your lifestyle.

Using the Manual

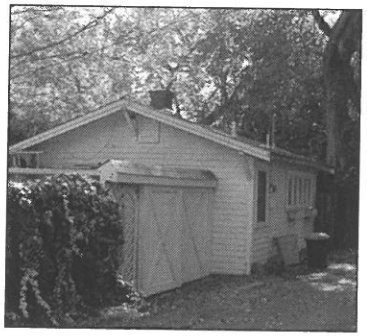
The purpose of the Garage Conversion ADU Manual is to assist you in understanding and solving special technical issues, interior layouts, planning of outdoor spaces, and other topics relevant to the planning and design of a garage conversion project. It is meant to supplement the more general City of Santa Cruz ADU Manual, which provides information on the development process and other questions you might have about ADUs or becoming a landlord.

Planning Your ADU

In planning your project, you will want to check the zoning ordinances to make sure your property is eligible. But also, like any investment, you should look at your needs and finances before talking to a qualified professional (architect, designer, or contractor). Reviewing the City's ADU Manual is also recommended, since it provides a more comprehensive description of the process.

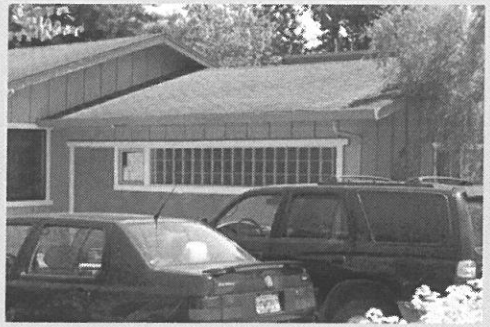
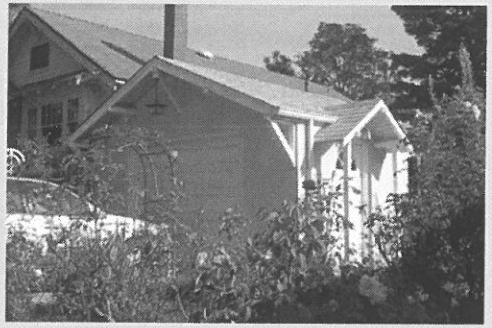
Accessing Other City Programs

The City of Santa Cruz has a progressive ADU program with financial assistance available, including low interest loans and a fee waiver program. For more information, visit the City of Santa Cruz's housing website (www.ci.santa-cruz.ca.us/pl/hcd) or call the Housing and Community Development Division at (831)420-5180.



In historic neighborhoods, "carriage houses" along alleys were common methods for adding worker housing.

This single story cottage was built in the 1920's creating a second address out of the neighborhood alley.

SECTION ONE: Special Conversion Issues

Investing in a garage conversion has its own unique issues and opportunities. The age of your house and garage may affect the amount of structural and mechanical upgrading required. Planning your ADU for a family member or another tenant may determine if you want to separate the ADU metering or share a utility bill. Building codes and your own finances may require energy-saving measures in your design. And, there are also ways to reduce the costs of a conversion that can be incorporated into the project.

Types of Garages

The age, location, and condition of your garage will influence the scope and cost of your ADU project. An older, pre-WWII detached garage may require a significant amount of structural upgrading or electrical work. A newer, attached garage may be a more adequate structure, though also require soundproofing or insulation. Each garage conversion has to begin with a basic analysis of your needs as well as the age, location, and condition of your garage.

Attached Garages

Many newer houses have attached garages. These often face the street and have space for two cars in the garage and two more in the driveway. Sometimes, older homes have been retrofitted with garages under the house. These tuck-under garages may trigger the need to upgrade the house and the garage.

Detached Garages

Neighborhoods full of cottages and pre-WWII lots typically have detached garages, which have another set of conversion issues. For example, access to utilities, impact on the privacy of neighbors, and replacement parking solutions may be different for a garage located in a back yard or along an alley. Detached garages can be more naturally set up for creating an independent unit to be rented out.

Sample Floor Plans

This manual includes a variety of floor plan options for different types of garage conversions (see Section Five).

The sample layouts for various types of garages and sites can help you explore the options for your own project.

Structural Solutions

Converting a garage from one use to another can require improvements to the basic structure. Structural improvements may be triggered by the condition of the garage, changes in building codes or conversion of the garage to a residential use. An experienced architect, designer, or contractor can usually tell you what the issues might be. Since garage conversions can be difficult, it is recommended that you consider bringing this building professional on board early in the process to help you understand the issues you might be facing. They can also give you guidance as to what the solutions and the costs associated with those solutions might be. The following gives you some general guidance.

Check the Condition of Your Garage

The cost and practicality of converting your garage into an ADU has a lot to do with its structural condition. Older garages in particular, are often not maintained at the same level as the house is. Checking for termites, dry rot, water damage, and other maintenance-related issues should be part of your planning. Also, older structures may lack basic seismic improvements such as foundation bolts, tie-down clips for rafters or lateral bracing. The City will require the garage to have suitable anchorage and lateral force resistance before converting.

Seismic Upgrades

There are three basic categories of structural issues that you may face in a garage conversion project. These include: the design and condition of the foundation; the ability of the garage to accept lateral loads caused by shaking from an earthquake or high winds; and design and condition of the roof and rafters.

The Foundation

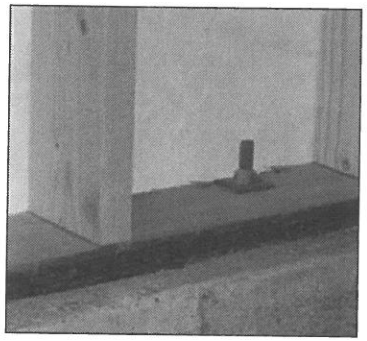
In older garages, the foundation may not have included steel reinforcing or anchor bolts. These garages may be at risk of being shaken off their foundations or collapsing in the event of an earthquake. Building codes have minimum requirements for reinforcing foundations and anchor bolts. Foundations that have reinforcing can be retrofitted. By adding expansion bolts and hold-downs, their ability to withstand lateral and uplift forces from an earthquake can be improved. In addition, gaps in the foundation where the garage doors are located offer an opportunity to add new foundation and shear walls (walls that withstand lateral forces), which can stiffen the garage structure. A new stem wall foundation in the former garage door opening can also prevent the intrusion of water.

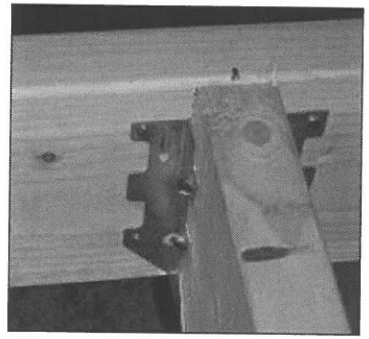
Lateral Bracing

Besides making sure that your garage foundation is bolted down, you should look for ways to stiffen the walls. Adding diagonal bracing, plywood and proper framing around windows and doors can improve your garage's ability to withstand lateral forces from an earthquake. The extent you will have to retrofit depends on the overall condition of the garage. Existing garages with good bracing will require minimal retrofit. Single wall structures will require significant rebuilding and may not be suitable for conversion. (Note: single-wall framing generally consists of either bearing or non-bearing vertical planks fastened to the roof and floor of a structure, with little or no other vertical or lateral bracing.)

Roof and Rafters

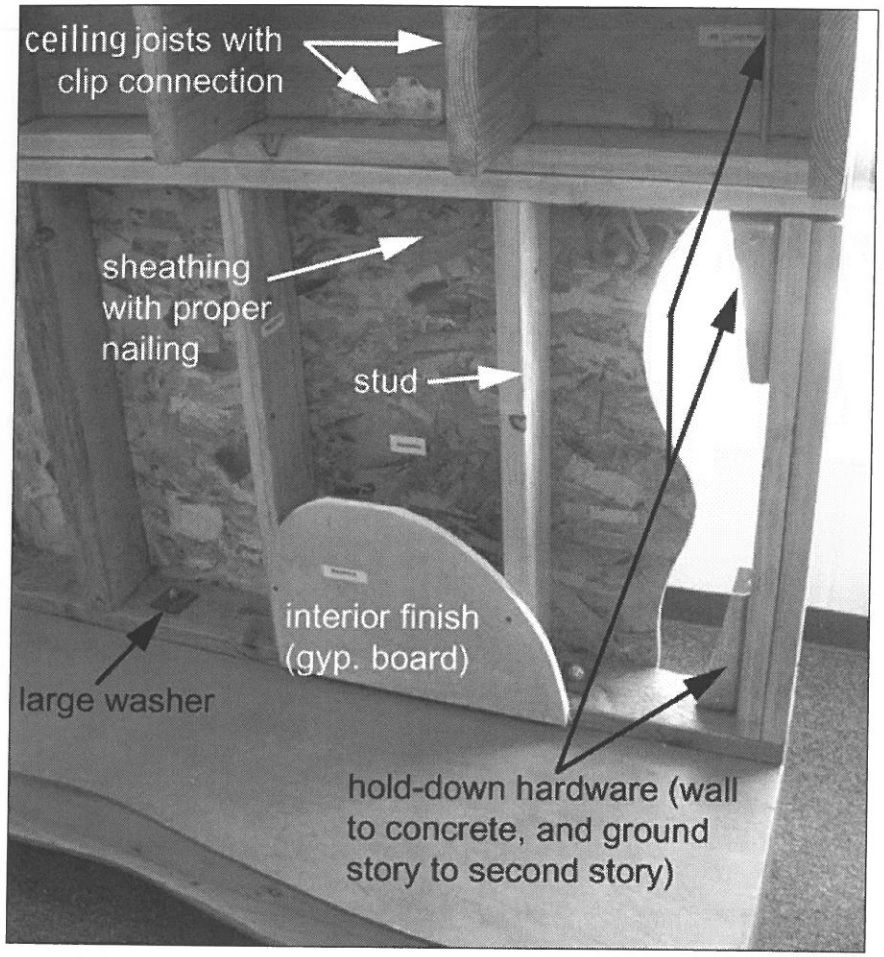
The roof and rafters of the garage are important structural elements that you should include in your seismic upgrade planning. Adding metal tie-down clips to your rafters can help hold the walls up in an earthquake and keep the roof from being blown off in a storm. If





Above:

Retrofitting your garage's structure may include adding anchor bolts at the foundation, metal fasteners for ceiling joists, and diagonal bracing in the walls.



Above:

This photo shows the typical components to frame construction. It features hold-down hardware the prevents earthquake forces from shoving the wall sideways and metal clips that hold down ceiling joists.

Model by Paul Johnson, North Road Builders, funded by FEMA

your garage is old, it may not have plywood sheeting. When replacing the roof, the addition of sheeting can stiffen the garage, keeping it from rotating in an earthquake.

Flattening a Sloping Floor

Most garages have sloping floors so that water drains towards the driveway. Converting a garage will require leveling of the floor. This can be done with concrete topping slabs or treated wood sleepers. Each has waterproofing, fastening, and practical considerations. Regardless of the leveling approach you choose, make sure the new floor is kept dry by preventing the intrusion of water.

Using a Topping Slab

A topping slab is a thin layer of concrete that is poured on top of the existing slab to make it level. It can provide an architectural finish or be covered with a flooring material. By adding a topping layer of special concrete, the floor can be leveled with minimum impact to the head height in the garage. For garages with low ceilings, it may be the best option. This can have an impact on your door heights and thresholds.

Building a Sleeper Floor

If there is ample clearance (7'-6" is the minimum ceiling height allowed in occupies spaces, 7'-0" is allowed for hallways), a treated wood floor can be laid on top of the existing concrete garage floor. This typically includes sleepers (treated wood slats) that are cut to level the floor and covered with plywood. Again, this can impact your door height and disabled access. So, plan ahead.

Utility Connections

Turning your garage into a living unit requires additional connections for basic utilities. This includes water, power, and sewer connections. Access to utilities and deciding what is shared with the house can influence how the unit is planned. Whether gas, water, and electrical meters are shared or separate, and how to make these connections, might affect your property value and construction costs.

Interior Planning Issues

When looking at your garage, identify the logical connection points for utilities. For example, where is the water and sewer access? In an attached garage, you may be able to have access within a common wall. Or, in a detached garage, you may more easily connect to an adjacent alley or street. This has some impact on how you will lay out your interior plan. The easiest

Making a Utility Connection Plan

location to install plumbing may, to a large extent, determine the way you organize the kitchen and bathroom in your ADU.

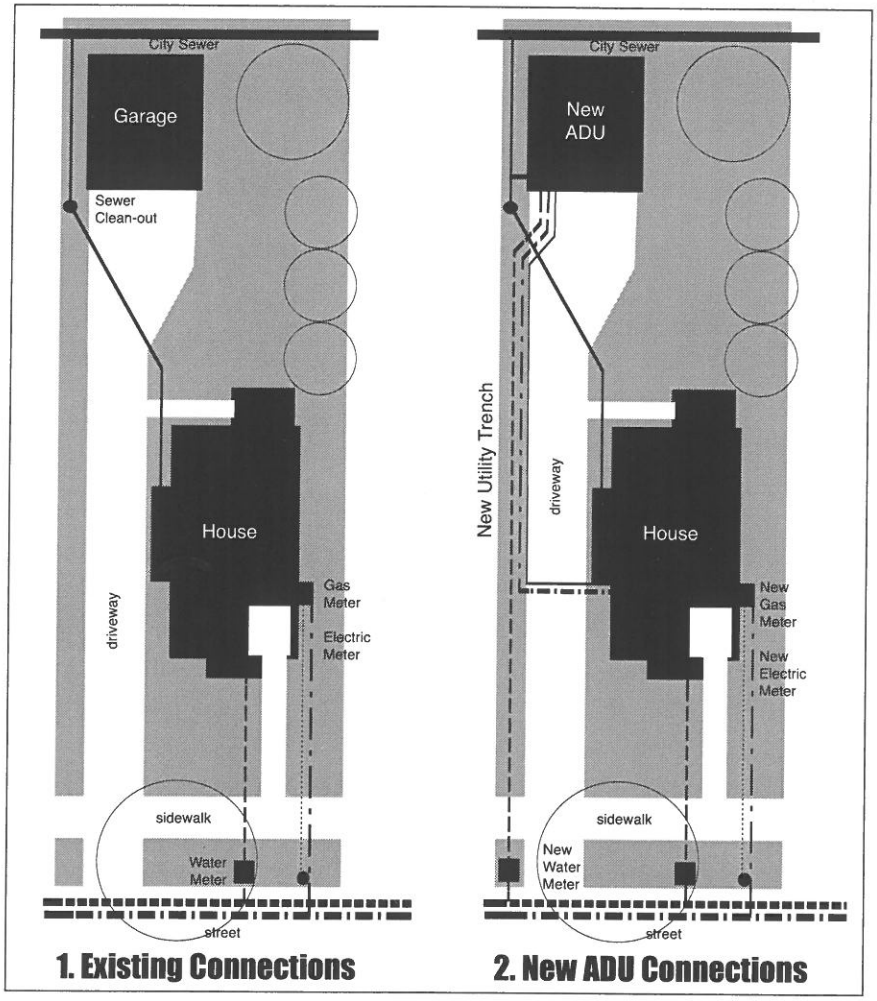
Locating Sewer and Water Access
Your contractor can use special tools to find the exact location of underground pipes. For initial planning purposes, you can locate your existing sewer and water lines by observation. First, locate where water and sewer service enters/leaves your house. You may be able to locate a sewer clean-out fitting on or near the surface of the ground or sidewalk between the house and the street - the sewage pipe will generally be in line with the house and the clean-out. Be aware that there may be more than one sewer pipe leaving your house. Next, find the water meter location. The water service line will run between the water meter and the house.

Once you have located your existing sewer and water lines, you can consider the location for kitchen and bath fixtures. Reducing the length of connections (and trenching) is a consideration for water lines. In some cases, an attached garage may have water service in a common wall that can be easily connected to. Where possible for sewer systems, it is recommended to make connections outside the footprint of the main dwelling.

For sewer, the depth and slope of the connection to the city sewer system is critical. Sewer pipes have to run downhill. Being too far away (thereby not allowing enough slope) or being below the city system can drastically increase the cost and feasibility of turning your garage into an ADU. Waste lines under the main house are often too high to be continued up toward a detached garage that is located in the rear yard. If a minimum slope of 1/8 inch per foot cannot be achieved in order when connecting to the main house's waste line, then a new lateral connecting to the street line will probably be needed. An alternative may be to include a sewage reservoir with a pump to transfer the sewage to a low spot in the existing system. Either of these are more expensive solutions. Clearly, tapping into an existing waste line is the least expensive option.

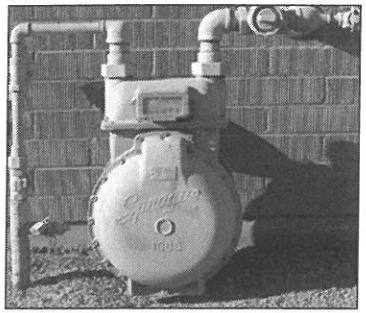
You can typically get a map showing the approximate location of utilities from the City's Public Works Department.

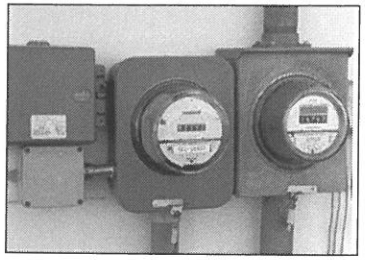
Sharing Electrical, Gas, and Water
It is recommended that an ADU have its own independent metering system. However, if there is sufficient capacity



Site Utility Access Diagram: Separate Meters

(1) This existing house and garage have gas, water and electrical utility access from the street and city sewer from the downtown back part of the site.
(2) This utility connection concept creates a new trench for utilities with new separate meters for water, electrical, and gas service.





Above:

One of the choices you will make is whether to share your gas, water or electrical meters. In some cases, such as water, the City may require a separate meter.

in your home's electrical, water, and gas systems, you could connect to those systems as long as you consider the other factors (see To Share or Not To Share Meters below).s

To Share or Not to Share Meters

Are you going to share electrical, gas, or water meters? This is an important consideration. (Imagine trying to sort out the bills every month with your tenant!) Separate meters generally cost more and sometimes the City will require new meters. You may also buy and install private sub-meters, which must be certified by Santa Cruz County Weights and Measures. This may be a more cost effective solution. To make a decision, you will need to think about who the tenant will be, the practical concerns about conservation of resources, and, if the meters are shared or sub-meters used, how to protect yourself in your lease. You need also to think long-term. You may be planning to have a family member live in your ADU, but in the future you may want to rent it out to a non-family member.

Although it is generally recommended that the ADU have its own independent metering system, if there is sufficient capacity on the main dwelling, separately derived electrical sub-feeds and gas systems may be used without additional metering.

Utilities and City Policies

Whether or not you share meters, in all cases, the ADU and main dwelling must have the capability of being disconnected from utilities completely without affecting each other. For this reason, the new ADU costs will have to include appropriate connection fees for water and sewer, just like any new dwelling would. However, the City of Santa Cruz has allowed for a reduction in fees for these small units.

Disengaging the Main House from an Attached Garage

Converting a garage means that you will be sharing your property and possibly even a wall with your tenant. This raises privacy- and safety-related considerations. Making the unit quiet, comfortable, and compliant with building code requirements for fire separation should be looked at as part of the same solution.

Insulating and Sound Proofing

In attached garages, a common wall may or may not be insulated. It depends on the age of the house. There are advantages for insulating a common wall–for example, it is quieter. Thermal insulation is also used as a sound insulator. So, where walls and ceilings are shared between a converted garage and the main house, added insulation can enhance your privacy.

Insulating Common Walls and Ceilings

In Santa Cruz, there must be sound control equal to a Sound Transmission Class (STC) of 50 or better. It sounds a bit technical, but there are a variety of ways to accomplish this. Some methods for soundproofing include adding fiberglass batt insulation and creating a double-stud wall between the units. The City's Planning Department can help with suggestions on how to proceed. If the ADU is separated from the main dwelling by six or more feet, this is not required.

Fireproofing the New Unit

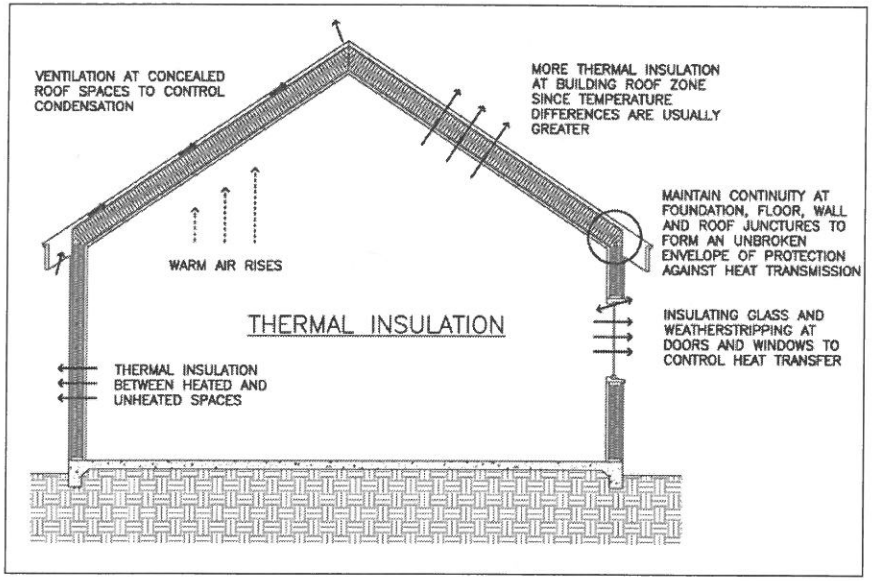
The City has building and fire codes that have been tailored to fit the community's safety needs. For attached garages, this means part of the project will be creating a fire separation between the house and new unit. In the case of an attached garage, this will require examining the common wall structure and the wall rating (how fireproof it is). Both attached and detached garage conversion ADUs require a fire sprinkler system

Separating the House and Garage
There must be a full one-hour rated fire separation between an attached ADU and the main dwelling in attached garages. This can be accomplished by constructing common walls to include fire blocking (adding wood blocking that prevents fire from climbing through walls between units) and additional layers of fire-rated drywall. Many attached garages in Santa Cruz are protected on the garage wall side for one hour fire separation, but when creating an ADU, the wall has to be improved for a full one hour rated assembly (both sides of the wall). The ADU Garage Conversion Prototype that is included in the City's ADU Prototype Plan Set publication included a second, plumbing wall built in front of the existing wall, satisfying fire-proofing requirements while at the same time making access easier to the waste and water lines under the existing residence.

A connecting door between units would require a one-hour rating (this rating can be found stamped or labeled on new doors). However, this option is not recommended unless there is a vestibule separating the units as well. A professional should be consulted on all of these fireproofing related design issues.

Fire Sprinklers and Smoke Detectors
In Santa Cruz, ADUs must have a fire sprinkler system and smoke detectors installed. The Fire Marshal will need to be consulted to see if there is sufficient water pressure and capacity to allow a sprinkler system to connect to the existing water supply. Otherwise there will need to be a separate line established with a new connection to the street.

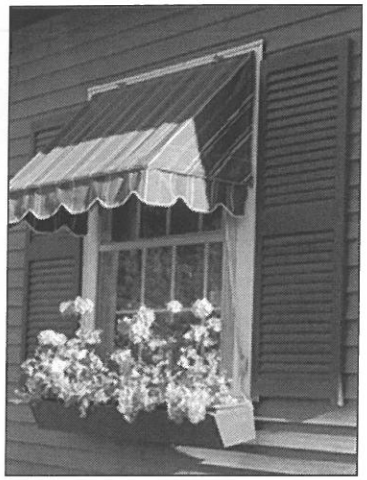
Mechanical Equipment
Space heating and hot water systems will need to be designed for the ADU . Gas-fueled space or water heaters are the most common solutions although they may not be installed in the sleeping area, where combustion can deplete oxygen levels or introduce carbon monoxide. However because of the larger amount of space in a typical studio ADU, a gas wall mounted heater, which takes combustion air from and vents to the outside, may be used. An efficient alternative for hot water can be an on-demand/instantaneous hot water heater. However, these must be located in a protected space, such as in a cabinet. (Note: The use of electric heating is essentially banned by the new energy codes which came out in October 2005.)

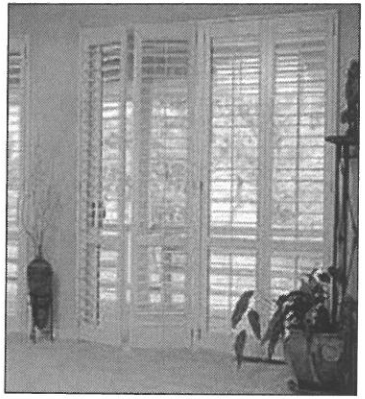


Above: Saving Energy

This section through an ADU shows how to save energy and increase the comfort of an ADU by:

- ***Reducing air infiltration***
- ***Adding roof insulation***
- ***Adding wall insulation***
- ***Adding insulated and double pane windows and doors***





Above:

Traditional methods for screening out the summer sun can save you energy and make your ADU more comfortable.

It is possible to use the space heating system for the main house if it can be adequately zoned so the ADU had independent heating capability. Also , if there is sufficient capacity, hot water can be provided from the main house by running additional hot water lines from your existing water heater to the ADU plumbing fixtures.

Energy Conservation and Green Building

About 60% of the average energy bill for an American home goes to heating and cooling costs. Therefore, the affordability of renting an ADU has much to do with reducing energy costs by picking the right heating and cooling systems, using natural day-lighting and ventilation, and energy-saving construction. Another consideration, particularly in the Santa Cruz spirit, is choosing materials and methods that are "green" and friendly to the earth.

The structure must meet the California Energy Commission requirements contained in Title 24 of the California Code of Regulations. This will include adding or improving insulation, modifying lighting and controls, or changing single-pane windows to energy efficient windows. Also, state and local regulations require the use of water saving fixtures, such as low flow toilets and sink faucets. In addition, starting on January 3, 2007, the City of Santa Cruz code will require green building features be included in any of your ADU plans before you can obtain a permit.

Heating and Cooling Choices

As with any new home, you have to choose how it will be kept comfortable for occupants and how much that will cost. There may be an opportunity to take advantage of Santa Cruz's moderate climate by capturing seasonal breezes and sun as well as selecting a cost-effective heating mechanical system. (The climate in Santa Cruz does not typically require a mechanical cooling system.)

Cooling with Natural Ventilation

Besides making a small space seem bigger, windows can be the most efficient way to cool and provide lighting for an ADU. Adding operable skylights and windows can capture breezes. Skylights can pull cooler outside air through the windows, while venting hot air through the roof. Consider the seasonal winds when locating windows.

Solar Heating

Window placement and sun screening are the most cost-effective methods of heating and cooling an ADU. Windows that allow the winter's low sun angles to be cast upon a dark wall or floor can provide passive heating of the unit. Of course, shading the same windows to keep the hot summer sun out should be considered as well. Roof mounted solar panels can be used to supplement hot water systems. If you are really gung-ho about taking your property off the grid, there may be an opportunity to add solar panels for electrical generation for the ADU, and possibly the main house as a part of your garage conversion.. The initial costs of these systems may seem daunting, but available rebates and a relatively short payback period in energy bill savings help to ease the financial impact.

Energy-Saving Construction

The biggest challenge with keeping a home warm is cutting down on drafts and allowing low angled winter sun into the house. Keeping your unit cool calls for walls that insulate from external heat while opening up the house to cool it down when temperatures drop outside. So, tight construction and sufficient insulation are important, in addition to careful selection of energy efficient windows and doors.

Wall and Ceiling Insulation

Title 24 requires residential construction in California to be energy efficient.

Using Green Building Materials

The following is a list of just a few "Green Building" materials considered to significantly reduce environmental impacts during manufacture, placement, lifetime use and post-lifecycle deconstruction. Combined with State mandatory energy conservation measures the finished structure poses much less impact on the environment and utility needs.

When ordering materials, consider not only the manufacturing process but also where materials are coming from. A local supplier/manufacturer can save considerable transport costs and use of fossil fuels. Compared with their conventional counterparts the following materials require generally less manufacturing and help to minimize environmental impacts:

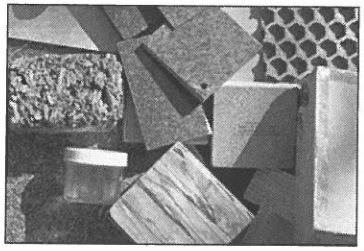
Getting Started/Site Selection:
- Consider renovating older building
- Deconstruct/recycle/reuse existing structures
- Choose least disruptive pad location to:
  - Minimize grading/land disturbance
  - Work around/protect existing trees
  - Protect eco/archeologically sensitive areas
  - Use solar orientation for maximum gain
  - Provide for onsite storm and gray water management
- Locate close to public transportation hub

Foundation / Under Floor:
- High volume fly ash concrete (min. 15%)
- CBA and/or ABQ treated wood (avoid arsenic)
- Permanent forms/insulated foundations

Framing/Sheathing/Exterior Cover:
- Forest Stewardship Council Certified Lumber
- Light gauge steel framing/straw bales
- Structurally insulated panels (SIP's)
- Finger jointed/engineered wood
- Salvaged timbers
- Agricultural boards (wheat/straw)
- Europly/medium density fiberboard
- Fiber-cement/recycled content siding and roofing
- Recycled content decking

Interior Environment/Finishes:
- Cellulose or cotton insulation vs. fiberglass
- Low or no VOC adhesives/solvents/paints/finishes
- Natural linoleum vs. oak/vinyl
- Cork and/or bamboo flooring vs. oak/vinyl
- Recycled ceramic content tiles
- Natural fiber/recycled content carpeting
- Salvaged wood flooring
- Recycled door/window trims

Plumbing/Electrical/Mechanical:
- Tankless or solar water heating
- Hot water circulation
- Ultra low flow fixtures
- Ultra high efficiency lighting
- Solar photovoltaic electric panels
- High efficiency heating/cooling
- Passive/active solar heating



Above:

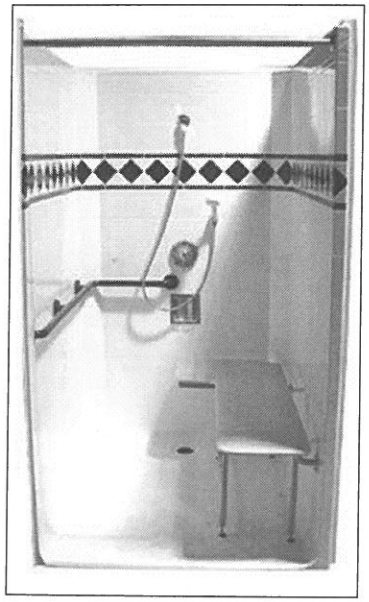
Using green materials has advantages for you and the environment. They could be salvaged, recycled or come from sustainably managed resources. They could be durable and have low toxicity. They can also save you money by reducing your water and electrical bills.

This requires a combination of construction materials and methods that result in an overall minimum energy efficient performance. Santa Cruz is located in Climate Zone 3 and requires insulation values of R13 for walls and R30 for ceilings/roofs. There are combinations of materials, windows, and doors that can be used to reach these insulation ratings. For example, 6" of fiberglass batt insulation has a value of R19.

The City will require that Title 24 compliance forms be filled out for your project, explaining how it meets energy efficiency requirements. Your architect, designer, or contractor should be able to help you do this.

Windows and Doors

Up to 50% of heating and cooling loads on houses are due to windows and doors. The energy efficiency of



Above:

The are photos of a pre-manufactured kitchen and bathroom shower that are designed to make life easier for those that need accessible units.

doors and windows are measured by their "U-value". This value is indicated on new doors and windows. Make sure you purchase doors and windows that allow your ADU to meet Title 24 energy requirements.

Accessibility

One of the advantages of converting a garage into an ADU is that it can be easily designed to be accessible for disabled and elderly residents. Its highly recommended that you do this to provide maximum flexibility for current and future use of the unit. This will take some pre-planning in terms of the needs of various types of disabilities. Wheelchair access is what we think about most often, but tenants could also be blind, deaf, or have other types of disabilities that would benefit from an ADU designed to improve their quality of life and increase their independence. In addition, the planning can anticipate the needs of caregivers.

Ramps and Doors

Providing access to an ADU and supporting self-sufficient mobility for the resident is of primary importance in the planning of an ADU. California Title 24 provides standards for access, much of which is common sense. How will tenants arrive at and access the ADU? Is there a ramp required and if so, can it meet code? Can a wheelchair move through the unit and turn around?

Vehicle Access and Proximity

If the tenant has to be delivered to the ADU by a caretaker or service, consider the location and access from the driveway or street. Is there a place where they can get in and out easily and safely? Consider the parking space width and the walkway design. Can a wheelchair or walker be easily maneuvered? Is the paving surface smooth? Is it too steep or are steps in the way?

Basic Design Criteria for Ramps

For a garage conversion that does not have a level entry, you will need to provide a ramp. The ramp cannot be longer than 12' without a landing and have a maximum 8% slope. It will usually require railings and must be at least 44" wide. If the ramp is less steep than 1:15 no railing is necessary.

Door Widths and Circulation

If you are designing your garage conversion as an accessible unit, you will also have to think about how a wheelchair can maneuver through the unit. The City of Santa Cruz has a local ordinance requiring all passage doors to be at least 32 " or 2' – 8" wide. (Doors accessing non-walk in closets may be excluded.) The main door outside must be 36" wide. These requirements are the same for any units. The critical difference for wheel chair access is to make sure there is enough space to maneuver a wheel chair. Also, the doors should open outward and have hardware that is easy to grip and push.

Access to Facilities

A disabled resident's independence will have much to do with how they can manage everyday activities. Access to and maintenance of bathrooms, cooking, and operating the features of the ADU all need to be considered.

Bathrooms

The design of a bathroom needs to accommodate turning a wheelchair (preferably at 5' but at a minimum a 4' radius) and fixtures that are accessible. Special sinks, toilets, and showers should be provided.

Kitchens

As with bathrooms, kitchens should be planned to increase the independence of the tenant. Low shelves and counters, accessible storage, sinks, and appliances should be considered.

Operation

Think about the everyday operation of your ADU. Are electrical switches low

enough to be reached by a person in a wheelchair? Can windows be easily opened when it is hot or closed when it is cold? Can the tenant do basic maintenance such as cleaning?

Caregiver's Perspective

Many disabled people require some extra help. They have professionals or family members that visit and support their independence. The design of the ADU should make room for one or more people that visit and help with moving, cleaning the unit, or feeding and bathing the resident. This may be a consideration if your ADU will be used for an aging parent.

Flexible Space

The key for care giving in small spaces is having the flexibility to open up an area designed for one person to accommodate two people moving like one. A kitchen island or even a non-load bearing wall can be built with wheels. Screens or curtains may substitute for movable walls. A flexible bedroom can provide a combination of privacy and the ability to be a part of activity in the common space if someone is bedridden.

Bathrooms

For assistance in an otherwise small bathroom, you might consider increasing access or reducing the confinement of the walls. Double doors, a wall that is a series of folding doors, or even a well-placed second door can be used to increase accessibility without losing privacy.

Showers/Bathing

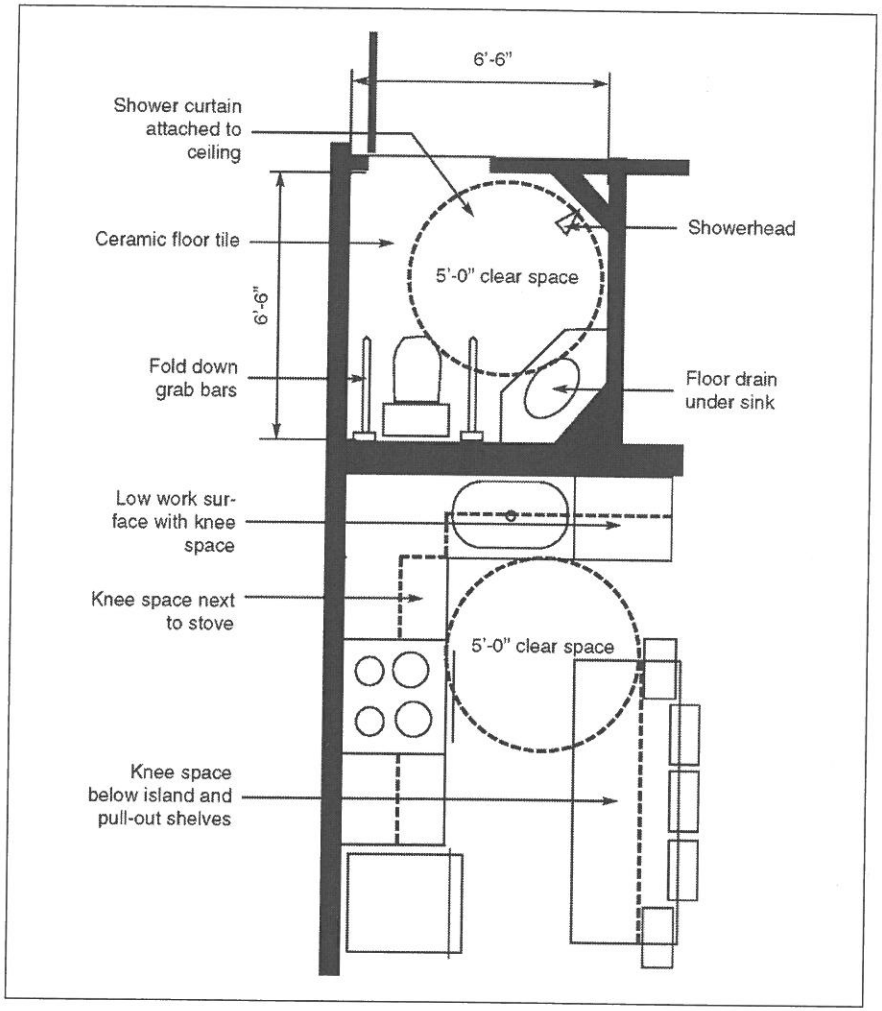
To open up the shower for assisted bathing, consider turning the entire bathroom floor into a shower floor with strategically placed drainage. This arrangement can help in clean-up for other functions as well. Another option is to provide a roll-in shower. be sure to provide structural blocking in the bathroom walls to which you can firmly anchor grab bars as well.

Reducing Costs

Keeping your ADU affordable starts with keeping it within a planned budget. Construction and renovation projects that involve existing buildings can be full of surprises, regardless of their size. Understanding the amount of structural and mechanical work required is an important start. There are often trade-offs between low cost construction or expedient design solutions that can cost you more in the long run.

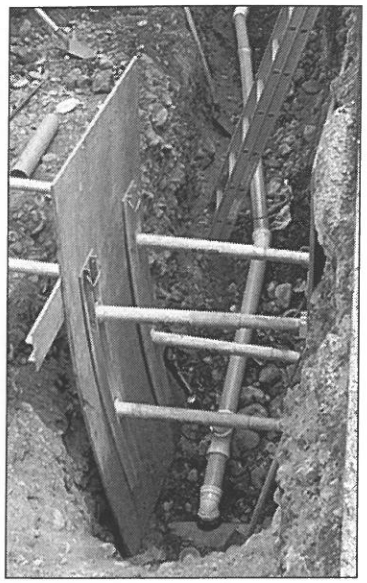
Plan Ahead

Of course you will plan ahead, right?



Accessible Kitchen and Bathrooms

Making small units accessible requires careful planning of bathrooms and kitchens. Consider the pathways to these rooms, maintaining a 5'-0" clear space, and work surfaces and fixtures that make life easier for residents.



Above:

Planning your unit to make efficient connections to sewer lines, water and power can save a lot of digging. How does your ADU plan respond to utility access?

This means you have studied your garage, developed plans, and know approximately how much it will cost. The things that you do not know about or consider upfront, you will likely need help to do – which will probably cost you more as well.

Study the Garage and Site
Make sure that you understand the basics about your site. Items to consider include utility access; orientation for neighbors' privacy, sun, and breezes; and relationship to your house. Draw a diagram of how it will work. Discuss it with an architect, designer, or contractor.

Have Plans
Start the project with a plan. You will have to get drawings done to get a building permit. Consider how to limit the amount of demolition and how to get the most out of your existing garage structural system. Make sure you purchase appropriate fixtures, windows, and doors. These will be required to meet energy and resource efficiency codes and ordinances.

Identify Work You Can Do Yourself
If you are handy, or want to be, then identify parts of the project you can do yourself. This might include demolition, framing, installing drywall, plumbing, or painting. Work with your contractor to identify things you can do.

Bid Your Project
You may want to consider getting more than one bid from architects, designers, and/or contractors alike. Make it competitive but realize that the lowest bid is not always your best choice. Check their references and their track record for delivering projects on time and within budgets.

Low-impact Design and Construction
Working with your garage's location and existing features can save you money. It allows you to be able to get the most out of what you have by reducing the amount of site work, reducing the scope of construction on the garage structure and exterior, and limiting the amount of modifications to the structure for adding windows and doors.

Reduce Site Work
Understanding your site and working with it can save money. Plan your unit for efficient utility connections. Plan where existing and additional parking can take place with the least disruption. Protect mature landscape features that make your yard livable.

Reduce Impact on Structure
You should make the most out of your existing structure, including foundations, walls, rafters, and floors. Keep the roof, if you can. Where it makes sense, use the existing garage door, window, and doorway openings to reduce the amount of framing and cladding costs.

Mechanical Solutions
If you are doing the work yourself, you can eliminate hiring a specialty contractor by purchasing ready-to-install mechanical systems. Heating, kitchens, and other systems can be delivered and installed, saving time and space.

Heating and Water Heaters
There are a variety of heating systems available. Make sure you are selecting ones that meet efficiency requirements and are sized for smaller units. Smaller water heaters and furnaces typically cost less and are more efficient than their standard counterparts. On demand hot water units are a great option that can save space and eliminate waste.

Plumbing
Prefabricated kitchen and bath units can reduce the costs of labor and reduce the construction timeline. Consider putting in only one sink–use the kitchen sink as the ADU sink. Make sure fixtures and prefab units meet efficiency requirements.

Finishes

Carefully selecting finishes can save money upfront and over the life of the ADU. Spending money on high-use finishes and surfaces means they will last longer with the same installation costs. Some finishes require specialized installation or expertise that cost more when it is time to replace it or do routine maintenance. Here are some things to consider with regard to picking finishes and materials for floors, walls, ceilings, and built-in cabinets.

Floors

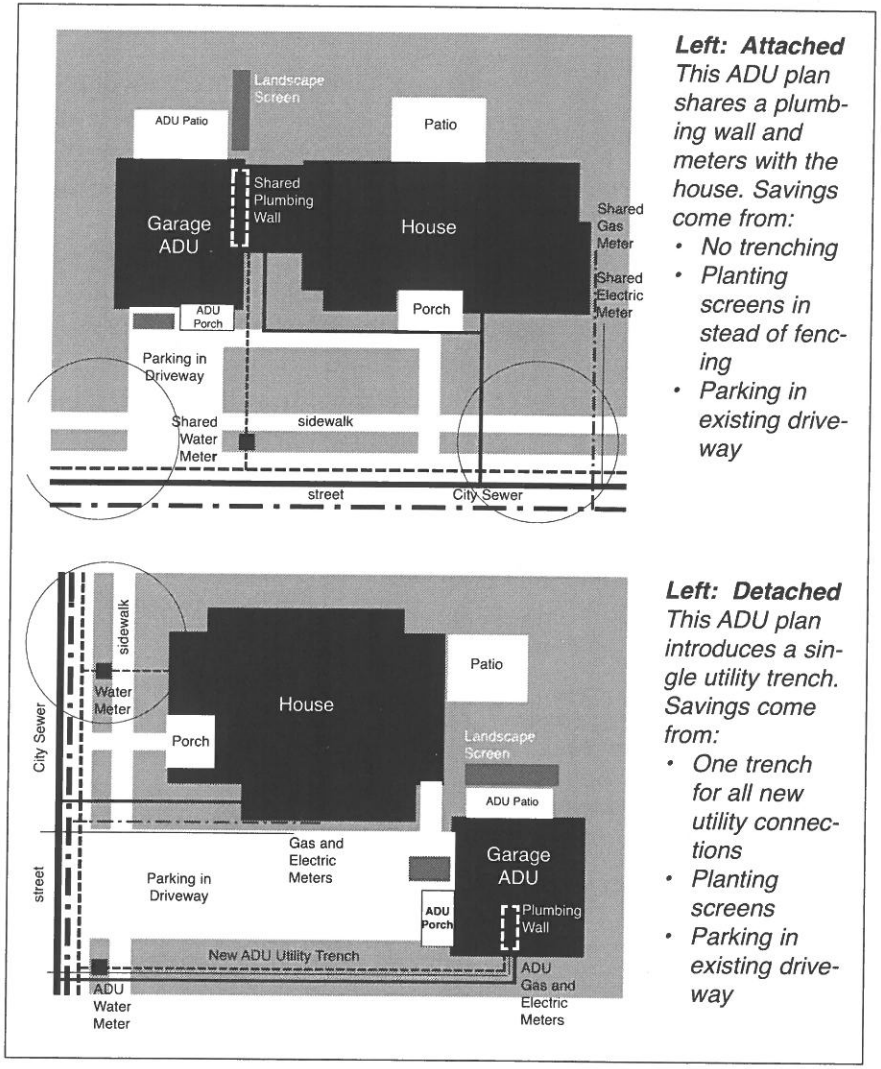
Flooring is expensive to install and maintain. Consider staining the concrete topping slab as an alternative to installing carpet, vinyl or wood flooring. Choose materials that can withstand moving furniture and concentrated traffic patterns. Think about how easy it will be to replace and repair the floor in the future.

Walls/Ceilings

Drywall is a cost effective and easily repaired wall surface. It also can provide additional fire protection and separation between an attached ADU and the house. You might also consider paneling made out of recycled materials. In any case, remember to factor in the cost of maintenance. For example, who will be responsible for the cleaning and painting of walls and ceilings?

Cabinets and Storage

When converting your garage into an ADU, planning storage is important. Consider that you may be displacing current storage space, not the least of which is your car. Storage space is especially valuable in a small unit. Planning to use outdoor storage can save space and be more appropriate for outdoor furniture, tools, and other occasionally use items. On the inside, open shelving costs much less than cabinets. Ordering pre-built cabinets can save money on labor, as long as you have planned for them in terms of their size and structural mounting needs. Consider the long-term durability of cabinets and balance that with the initial cost.



Left: Attached
This ADU plan shares a plumbing wall and meters with the house. Savings come from:

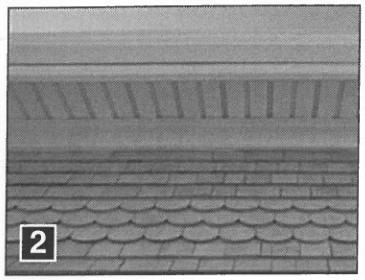
- *No trenching*
- *Planting screens in stead of fencing*
- *Parking in existing driveway*

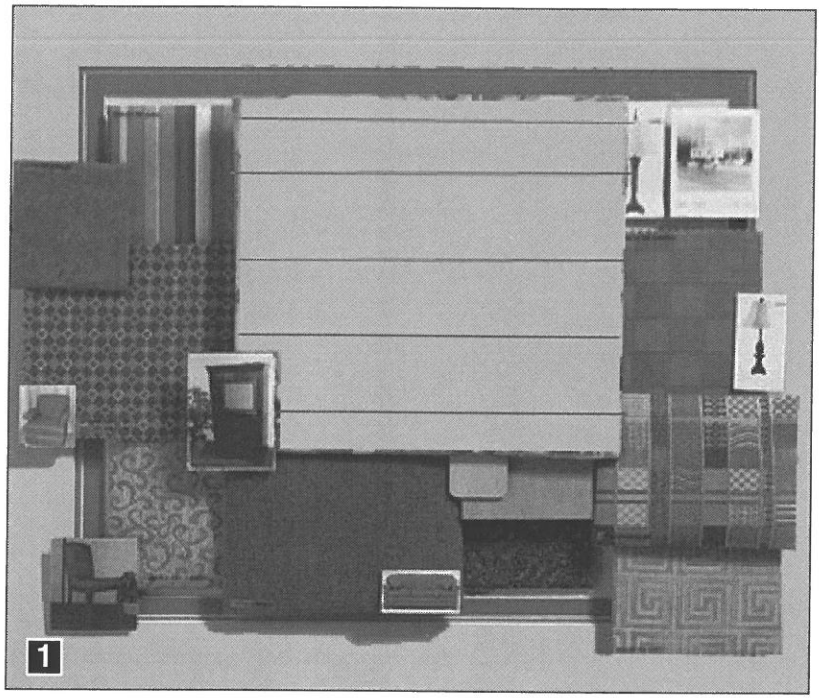
Left: Detached
This ADU plan introduces a single utility trench. Savings come from:

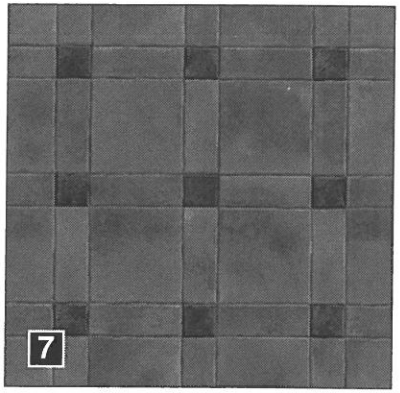
- *One trench for all new utility connections*
- *Planting screens*
- *Parking in existing driveway*

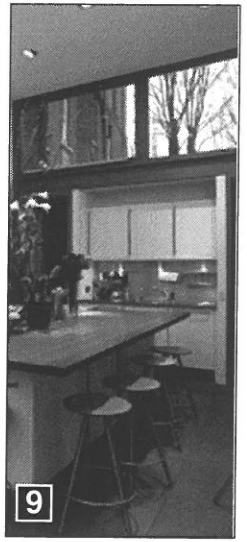
Site Planning Strategies: Reducing Costs
These site diagrams show two ways to reduce costs. The top shares meters and utility/plumbing walls reducing site work and hook-up costs. However, it will make it harder to assign monthly utility bills. The second site diagram shows the creation of a single new utility trench and separate meters. The single trench costs less and and is less disruptive than multiple trenches and makes the tenant responsible for their utility bills.

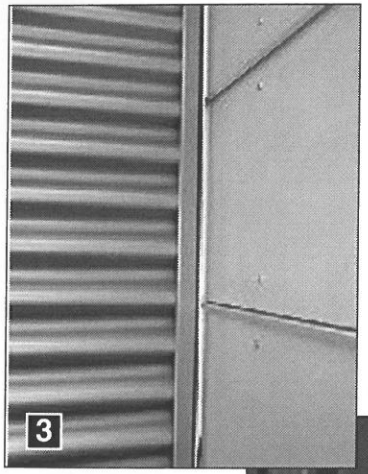
EXAMPLES ONLY. NOT FOR CONSTRUCTION.

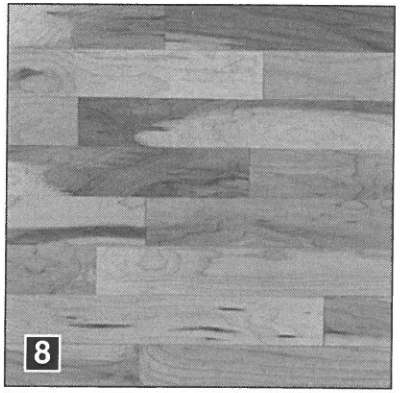


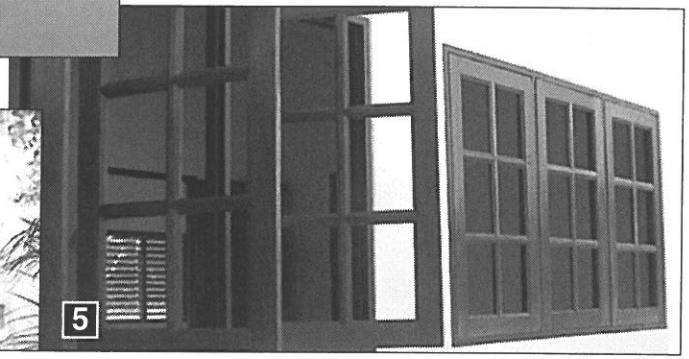


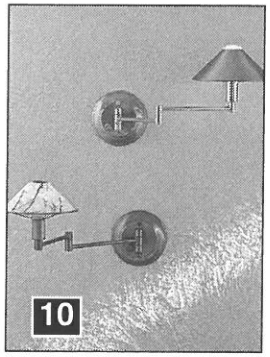


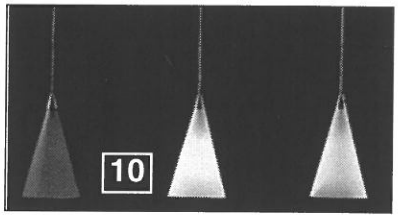


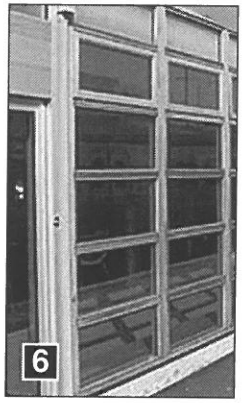












Above:

(1) Sample Material Board–planning your finishes and colors, (2) Traditional wood siding or contemporary contrast metal siding (3), (4 and 5) Wood operable windows or metal sash windows (6), (7,8) Choosing floor finishes that meet your budget, maintenance and design needs (9) Kitchen countertops, appliances and cabinets, (10) Lighting fixtures



SECTION TWO: Neighbor Friendly

Santa Cruz's ADU ordinance emphasizes being a good neighbor, regardless of the size of the project. Your garage has been a physical part of the neighborhood and, now, as an ADU, it will become a social part too. Adding new neighbors to the neighborhood requires design solutions that respect the character of the block and the privacy of those around you. This section examines architectural design opportunities and protecting privacy.

Looking for Design Opportunities

Your garage conversion is an investment that can add both value and appeal to your house. It provides an opportunity to reshape your yard and outdoor spaces, improve your "curb appeal" with new architectural features, and create a welcoming entry. All this can be accomplished while being a good neighbor.

Now, Where Do We Park?

When you decide to convert your garage into an ADU, you have to figure out where to park your cars. As mentioned before, Santa Cruz has generous standards for parking when you build an ADU; it allows using up to 50% of your front yard for parking. That could cause aesthetic and privacy impacts on you, your tenant, and neighbor.

Location of Parking

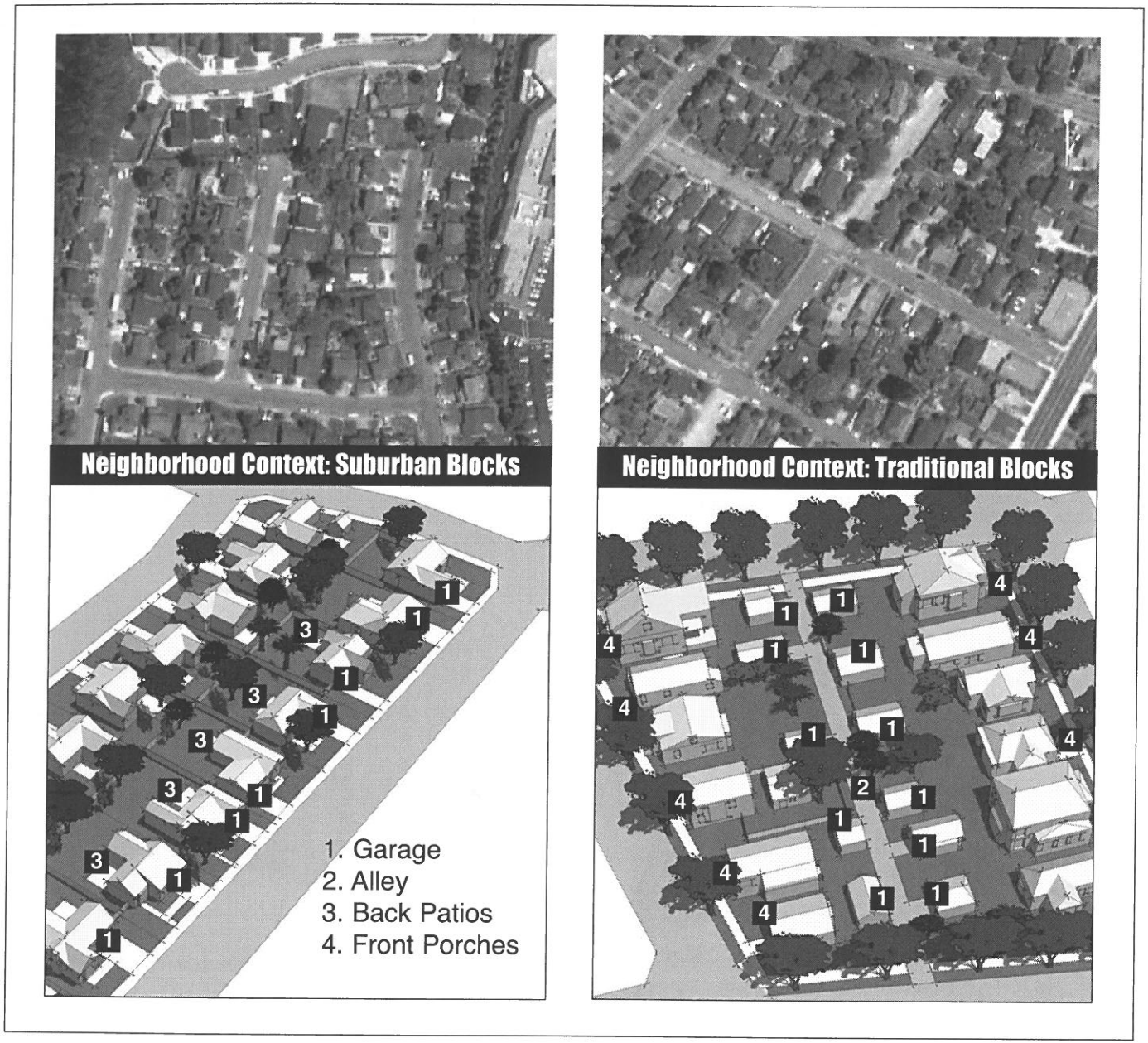
When you plan additional or replacement parking, consider how you access the spaces. You have to be able to move cars on and off the site, but also walk to them. As part of this decision, you have to consider the impact on the neighbors and tenants. Will it be noisy? Are you placing the cars somewhere that is too visible? Are the headlights glaring into the house, ADU, or neighbors?

Parking Surface

The City requires some sort of paved surface for parking. This may include concrete paving; unit pavers such as brick, stone, or concrete block; or permeable systems that allow grass to grow or gravel to be used in combination with the pavers. You might also consider using "Hollywood drives," where grass or groundcover can be planted between the wheels. From a design standpoint, reducing the amount of paving and visually breaking it up

Right:

Santa Cruz has a variety of block sizes and shapes. The era in which they were built also reflect the importance placed on the automobile and parking. Garage locations in Post War suburban neighborhoods have parking and driveways facing the street. In older traditional neighborhoods they may be located at the rear of the lot or along an alley. Houses in Post War neighborhoods also stress "patio lifestyle" where as older blocks emphasize the front porch. What is your neighborhood like? Where are the private spaces on your lot?



can reduce the visual impact of surface parking.

Landscaping

You should include a landscape plan as part of your parking solution. You can use landscaping to reduce the visual impact of parking. You could include low fences, shrubs for screening, and shade trees to break up paving and hide cars.

Looking Around–What's my Context?

Renovation and reuse of your garage is an architectural opportunity that your neighbors will also be interested in. Your garage may have been designed as utilitarian backyard structure or as an architectural extension of your house. The garage may be located along an alley or directly facing the street. Understanding how your improvements fit into your block and neighborhood is part of being a good neighbor.

Your House and Garage

Parking the automobile is a visible part of the neighborhood landscape in most of Santa Cruz neighborhoods. Whether you are in a traditional neighborhood with "carriage houses" and alleys, have a "Hollywood drive" with wheel tracks running to the rear of the lot to a garage, or a post-WWII house with an attached garage, your garage is part of

Privacy in the Neighborhood

your neighborhood's patterns and traditions. Introducing a tenant into this pattern requires special attention to be paid to the orientation, design, and access for an ADU.

The Block

There are many neighborhoods in Santa Cruz that have traditional alley blocks, providing an opportunity to create a "new address" for the ADU. End lots are good candidates for ADUs and garage conversions. They offer two frontages for parking and orientation of units and yards. Street-facing garages in the middle of the block are more constrained in terms of access where privacy and practical access solutions need to be carefully considered.

Improving the Curb Appeal of the House

For houses that have visually prominent garages, ADUs offer an opportunity to improve the curb appeal of the house and yard. You will be eliminating the garage door for cars and creating a new entry. Section Four discusses in greater detail outdoor space and site planning opportunities, so let us focus on the architectural options.

Getting Rid of that Ugly Garage Door

The garage door location is the biggest architectural opportunity for most ADU

Left: Privacy

The diagram to the left shows three garage conversions ADUs. Two are in rear yards and the third is attached and in the side yard.

Each of these create private spaces for the ADUs that are screened from their neighbors. They also:

- ***Have transom windows facing neighbors placed high in the wall;***
- ***Use a combination of walls, trellis, and landscaping to create private spaces; and***
- ***Locate ADU entries so that residents do not have to walk past neighbors' windows.***

conversions. It provides a chance to express the unit's floor plan with indoor and outdoor connections or introducing a porch or entry. Adding nice windows or doors can give a garage ADU a more social orientation towards a street, yard or alley.

Consider Opportunities Created by a Large Garage Door Opening
In some garage locations, reusing the garage door opening for roll-up or rolling doors can expand the living space to the outdoors. This is a particularly good way to expand a living or bedroom out onto a patio or courtyard. Remember, you will have to make sure your garage is structurally capable of supporting new doors and has enough walls in other places to handle lateral forces from earthquakes.

Creating a Welcoming Entrance
The orientation, connecting pathway, porches, overhangs, and lighting of an ADU entrance can add value to the unit and the main house. Units facing streets can provide "eyes-on-the-street" making neighborhoods safer.

Privacy

The number one issue brought up in community workshops focusing on ADU design in Santa Cruz was privacy. The ADU does introduce a new neighbor–one for you, and one for your next door neighbors. So, how can you plan your unit and the site to protect the visual and audible privacy of neighbors and the tenant? Privacy can be impacted by your choices about: the location and access to common and private spaces; the location of the ADU entry and the path people walk to get to the front door; as well as the location of windows and doors.

Private and Shared Spaces
One of the planning topics you should consider is the location of and access to outdoor spaces. Will the spaces be shared with the tenant? Will they be visible from or too close to your neighbor's lot? Planning your unit to respond to the privacy needs of neighbors will largely depend on whether you are converting an attached or detached garage, and where it is located on your site relative to the house and your neighbor.

Attached Garages
For attached garages, you will have to define the location of the front, back, and side of the ADU. This can be tricky because you have only three or less sides of the garage to work with. This will influence your internal planning and outdoor spaces that are used by the tenant, resident, or both. You want to avoid introducing access to the unit that impinges on neighbors' private indoor and outdoor spaces.

Detached Garages
Detached garages have all four sides available to provide visual and physical access to the outdoors. Defining yard spaces for backyard garages and access is an important privacy consideration. For alley garages, orientation towards the alley can reduce the privacy impact on residents and neighbors. Corner lots have two fronts making the creation of separate entries and yard spaces easier to accomplish.

Access
Think about what happens when your tenant comes home late or they have a visitor. Do their car lights shine into a neighbor's window – or your window? Have you located the entry and walkway somewhere that forces them to walk by a bedroom window or tempt them to take a shortcut through someone else's yard?

Parking and Privacy
Locating parking in a place that does not immediately impact your neighbor, the resident, or ADU tenant can be a challenge, particularly on smaller midblock lots. The noise, headlights, and the physical presence of cars have to be

considered in the planning and design of your site.

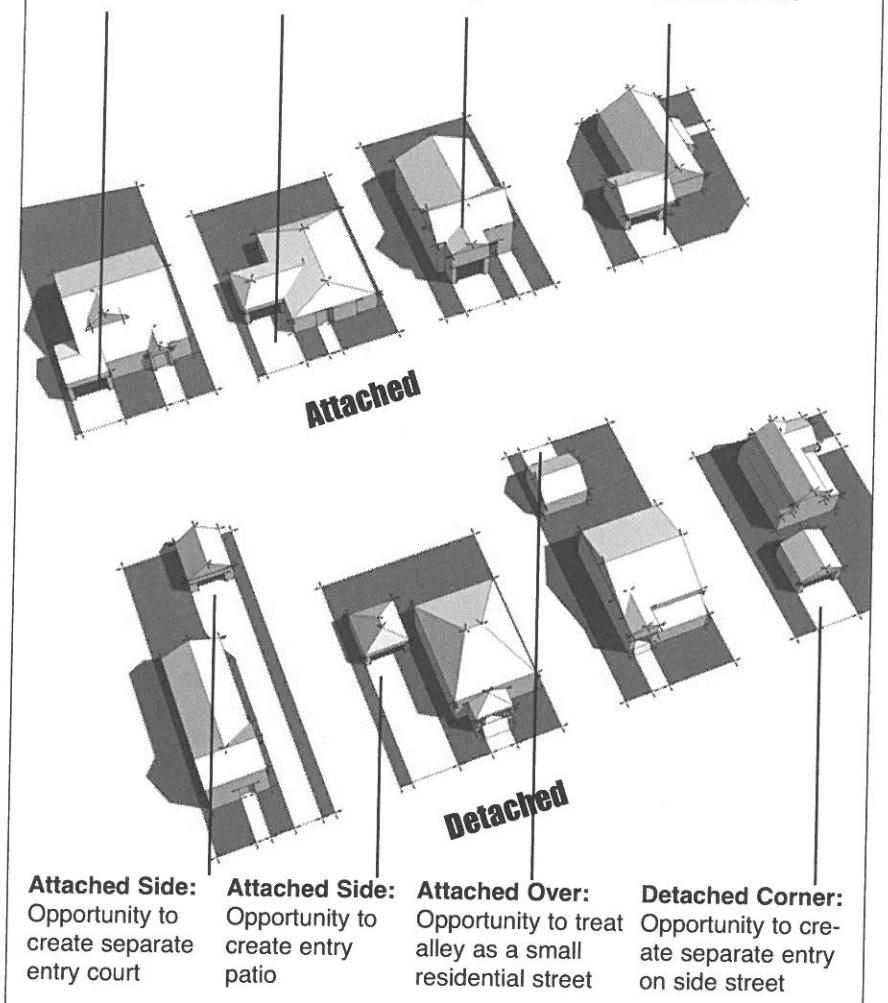
Entry Door Location
Another privacy consideration is where you locate the entry to the ADU. It is best if it can be oriented towards a street or common yard, where both visitors and strangers can be seen.

Pathways
Access to the ADU should be from a front walk, alley, or carefully considered side yard pathway. You want to avoid having tenants and their visitors passing by bathroom and bedroom windows, particularly a neighbor's.

Windows and Views
Where you place the windows in your garage conversion ADU should be influenced by a combination of your floor plan and the location of adjacent houses and yards. You need to think about views that you want to avoid, like sleeping areas and bathrooms. You should also think about views that you want to purposely capture, like gardens or public streets.

Alignment
Consider the location of windows in terms of your neighbor's privacy. Offset windows and clerestory windows (higher narrow windows) to avoid direct sightlines.

Shared Views
By thinking of your ADU in the context of your landscaping plan, you can expand the interior by creating views towards patios, gardens, and yards. These views may be shared with tenants and residents. Your landscaping can provide these shared views and still protect privacy by considering screening and directing views. This is true for front yards and pathways. Keeping an eye on public access to your yard improves security too.



Locating and Defining Entries

Right: ADU Entries

Locating the front door of the ADU should protect your neighbors' privacy, provide "eyes-on-the-street", and create a sense of entry and identity for the tenant,

EXAMPLES ONLY. NOT FOR CONSTRUCTION.

Right: New Entry

These before and after photo simulations show architectural opportunities presented by converting your garage into a ADU. The simulations borrow design features from the house as traditional or contemporary designs.

ADU Front Entry: 2-car Garage

ADU Front Entry: 1-car Garage



SECTION THREE: Creating a Livable Interior

Living in a 400 or 500 SF ADU can feel cramped and crowded or surprisingly open and workable. Success is all in the plan. This section explains how to think about organizing the layout of your garage conversion ADU. It discusses the relationship with outdoor spaces, kitchens, and bathrooms as well as storage and being creative about sleeping areas.

Organizing the Plan

In Section One, we discussed the need to think about who will live in the unit and the need for external connections, such as utilities. In Section Two, we considered the privacy needs of tenants and neighbors. This provides the context, and now, how do you want to organize the interior of your ADU? Making a 400 to 500 SF space provide for a comfortable lifestyle depends on creating a plan that gets the most out of multi-tasking space as well as practically and visually expanding the interior space outward.

Indoor-Outdoor Spaces

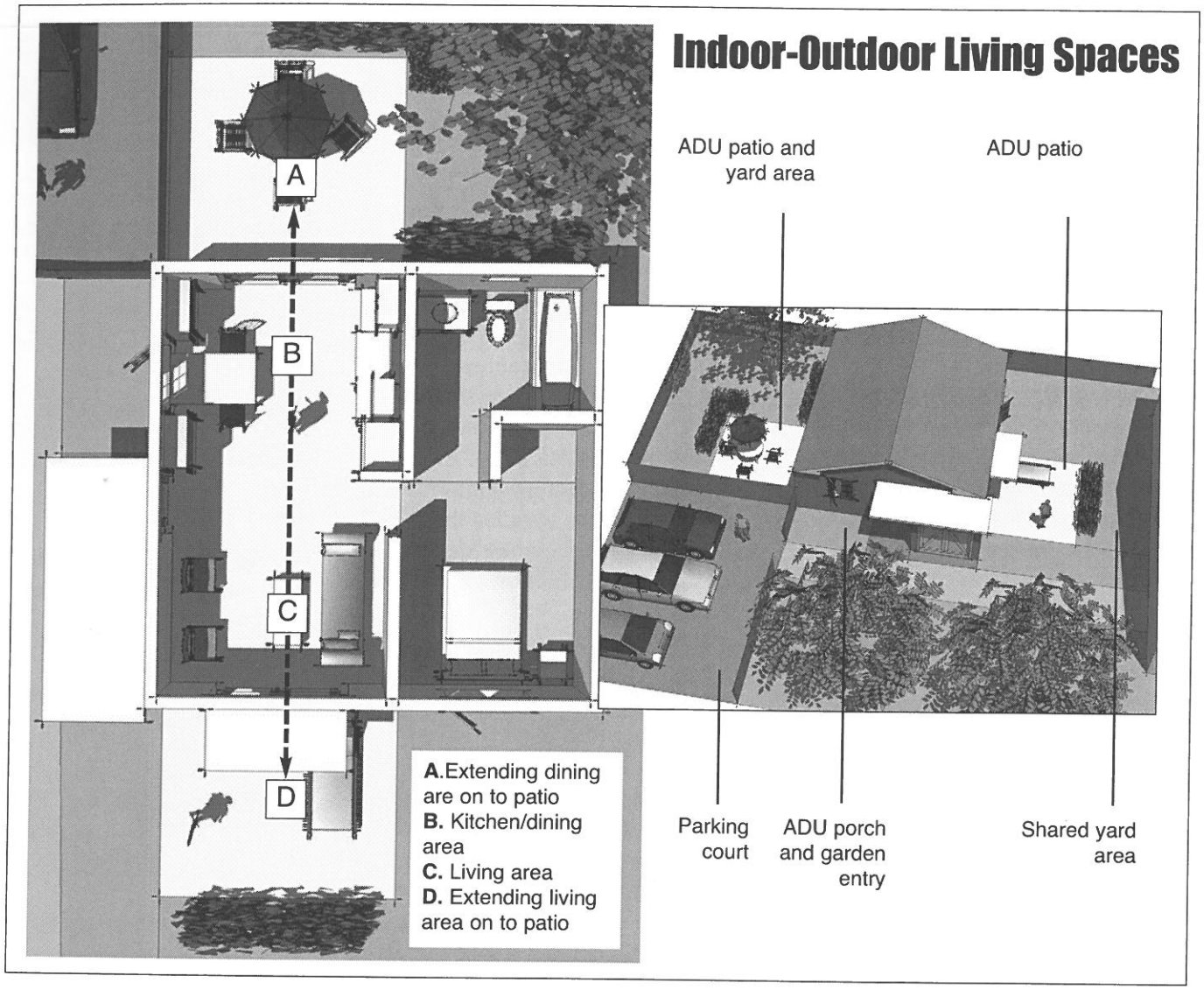
The famous American architect, Frank Lloyd Wright, designed houses noted for a well-connected flow of indoor and outdoor spaces. We are not aware of any ADU garage conversions designed by Wright, but we can steal some of his tricks anyway. If we think about the flow of the plan, from a circulation or room layout perspective, you can find ways to visually and functionally expand the ADU. This section focuses on the interior spaces or those connected to the ADU structure. Section Four discusses the detailed design of outdoor landscaped spaces.

Entry Spaces

Using porches as an extension of your living space can greatly increase the livability of the ADU. Creating small "front yards" and porches visually and functionally expands a small ADU.

The Outdoor Rooms–Extending Indoor Living

Patios and gardens provide additional ways to make a small unit bigger. These "outdoor rooms" are perfect for Santa Cruz's climate, providing spaces to entertain guests, relax, and tinker. These outdoor rooms may also provide access to additional storage.



Above: Indoor-Outdoor Spaces

This diagram show how patios and gardens can expand the useable and visual space of a small garage ADU project.

Multi-Function Space Saving Opportunities

Using space for more than one function is necessary for living in small interior spaces. Double tasking spaces will require you to identify things that cannot move, such as fixtures, and things that can, such as furniture. Using circulation routes for overlapping functions is another strategy that can be exploited.

Circulation

The circulation planning should be kept simple as possible without redundant routes. In a small ADU, every circulation route should be "double tasked." That means chairs can be pulled out from under tables, cabinets can be opened into them, and they can be temporarily used for activities like setting up an ironing board or an exercise mat.

Think carefully about where you locate doors. How do they line up? How much room does their swing take? Where is the door when it is open? Doors dictate circulation routes and access to sleeping, eating, and bathing areas. Maybe your ADU will not have any interior doors. Should it be an open floor plan?

Fixed Furnishings and Equipment

As in a boat, everything that is built-in

has to be functional. Built-in sinks and fixtures can be left open and include storage above. In the kitchen, open adjustable shelves can provide a flexible approach to storing tableware, linen, and pots and pans. Closed cabinets should also be flexible and be used as counter space and dining surface. Linens, coats, and brooms may be stored and organized in one cabinet with moveable dividers and shelves. Open shelves located above and below furniture can provide flexible storage as well.

Overlap Use of Spaces

As with circulation, the use of small spaces should accommodate dual and overlapping uses. The dining area may be a fold-down table or counter space. It may be a table that slides out of a cabinet. A small cafe table may be pushed against the wall and pulled out for guests. A small study area can double as a media center for a TV and bookshelf. A Murphy bed can fold into a living space. A built-in bed can have drawers under it. As you explore your ADU planning, test it for how many ways it can be used and configured by a tenant.

Kitchens and Baths

The kitchen and bathroom can use a lot of space and are typically separate from living spaces. In a garage conversion, they will be smaller and harder to separate. So, how do you plan for kitchens and baths that will probably be small and more visible? There are three areas of planning that can help guide your design. These include understanding the minimum functional requirements, basic plumbing issues, and choosing space-saving fixtures.

Function and Design

When trying to save space, using minimum rather than maximum dimensions is sometimes required. Of course, common sense helps too, as does remembering who will be living in the ADU and their access needs.

Bathrooms

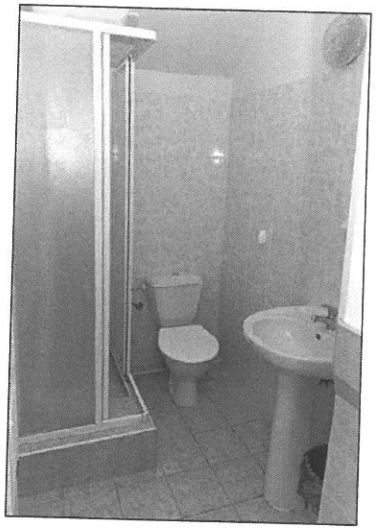
A traditional small bathroom that includes a sink, bathtub, and toilet requires a space approximately 5'-6" x 8'-0". The absolute minimum size for such a bathroom is about 5'-6" x 5'-6". This can be made even smaller if the sink is removed and the kitchen sink is used. A small shower and toilet with a pocket door only requires 3'-0" x 5'-6". However, keep in mind there are minimum area requirements for showers as well as clearances for toilets required by the building codes. Providing extra light, using lighter colors, installing smaller wall-hung or pedestal sinks, small one-piece toilets, and providing hooks and baskets rather than cabinets can make a small bathroom seem larger.

Kitchens

A small, functional kitchen area can be a one-of-a-kind design, a modular solution, or a pre-manufactured kitchenette. A small kitchen can include an under the counter refrigerator, small two-burner cook top, sink, cabinets, fan and/or microwave as space-saving features. These smaller solutions can require as little as 54" to 74" or 75" to 99" with an upright refrigerator. These components can be installed in a straight line against an outside wall, in an 'L' shape in a corner or with an integral dining surface.

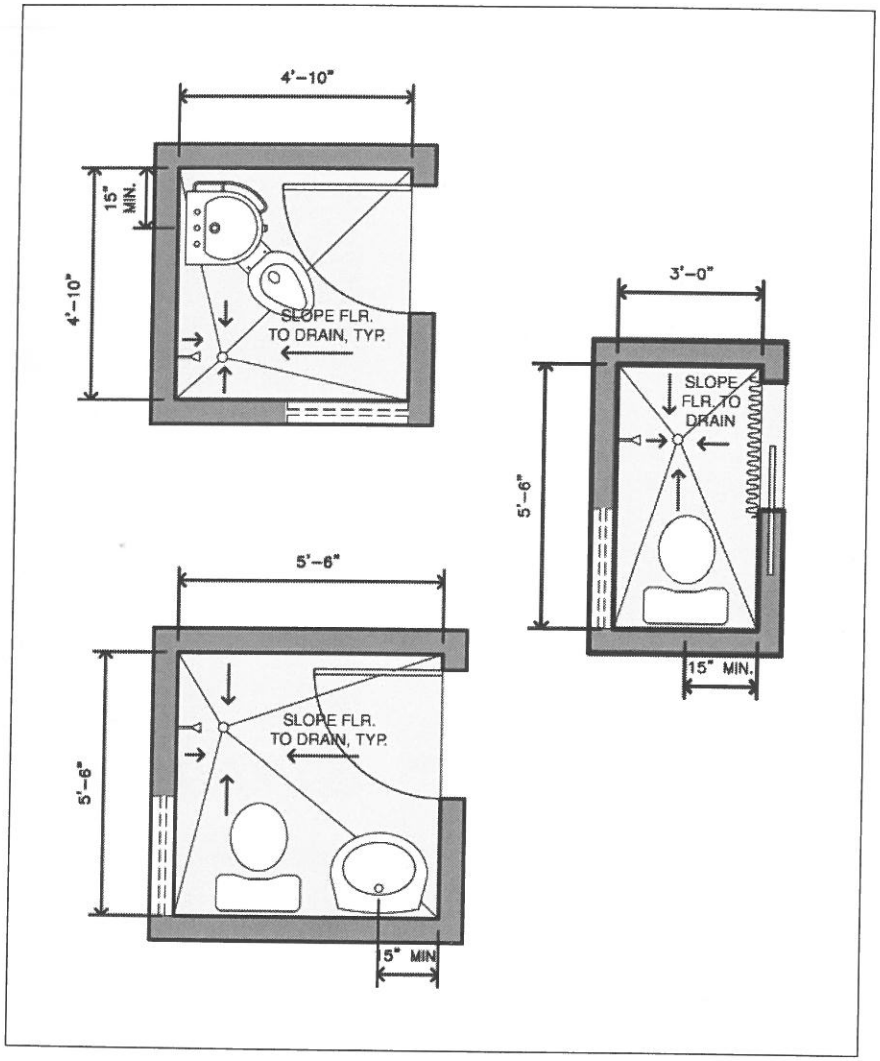
Wet Walls

In an attached garage, the common wall with the house may already have plumbing in it. This might include hot and cold water, sewer pipes, or both. If you are going to share a water meter and there is enough water pressure, then tapping right into this source at this location can save you money and reduce the amount of digging and disruption. It also provides an opportunity to correct defective or substandard conditions within the existing walls. Or, you may have to create a new plumb-



Above:

This bathroom makes the most out of a small footprint by using a pedestal sink. smaller toilet, and transparent shower. It also includes a window and light-colored finishes.



Above: Small Bathroom Diagrams

These small bathroom floor plans show how overlapping shower, sink and watercloset fixture layouts can save space. Sliding doors or curtains are another method.

ing wall where access to water and sewer pipes can be shared for the kitchen and bath.

Existing Wet Walls

For ADUs being developed in attached garages, there may be an opportunity to connect plumbing to a shared wall. If there is a kitchen, laundry room, or bathroom against the garage wall, there is a possibility to connect directly to it. This will start to shape your floor plan. In some cases where your garage has living space above, there may be other connection opportunities. Again, this depends on your water pressure and desire for separate metering.

New Plumbing Walls

Creating a new plumbing wall is another consideration. By placing the bathroom and kitchen on the same wall you reduce the amount of water and sewer lines. This might happen along an outside wall or a small "wing wall" that is shared by the bathroom and kitchen.

Choosing Fixtures

Picking fixtures that are appropriately sized or meet the special needs of the tenant may require some research. Besides the size issue, there are some other choices. You may find designing your ADU to accommodate a prefabricated or an "all-in-one" kitchen or bath is easier. However, you still have to make sure that your choice meets local codes, conserves water, and can be easily maintained and serviced.

All-in-One Units

There are many manufacturers of all-in-one kitchen and bathrooms. If you choose to use prefabricated kitchens or bathrooms, make sure the units meet Title 24 and local efficiency codes. You can research this on manufacturer websites and by talking to local dealers and retailers.

Conservation

Do you have old fixtures sitting in the back of the garage or offered to you for free by a neighbor? Reusing old fixtures does not always save you money. They will often result in higher water and sewer bills. In fact, the City offers rebate programs for older toilets and washing machines that use too much water. You can cut your indoor water needs in half by installing newer efficient fixtures. For example, some older toilets require as much as seven gallons per flush compared to newer 1.6 gallons per flush toilets.

Maintenance

Spending a little extra money on quality fixtures and connections can save you money later in maintenance and

replacement costs. Fixtures will get a workout over the years. Think about how to strategically invest in fixtures that are inexpensive to repair. Ask your contractor or plumber for recommendations regarding low maintenance plumbing fixtures.

Storage, Storage, and More Storage!

Living in a small ADU requires some creative storage solutions. It is not likely that you will be planning large walk-in closets or anticipating the storage needs of a family of six. However, a single person or couple will still need to find places for clothes, dishes, books, and other items that support even the simplest of lifestyles. Everything needs a place. Simple design features like locating a door 12" rather than 3" out from an adjacent wall, allows bookshelves to be placed or built in behind the open door, on wall that would otherwise be useless.

A Place for Everything

With limited floor space, storage strategies go vertical and demand a combination of specific and general applications. Think about how someone would use each space and find opportunities to build in storage that supports basic needs. Count on the ingenuity of the tenant to create storage solutions to meet their specific needs.

Built-in Solutions

If you add built-in storage in your ADU make sure it is appropriate for living in a small unit. Space is at a premium. Kitchen cabinets, bath/linen storage, and shelving need to be practically sized and configured to meet the needs of the tenant without taking up a lot of floor area. Systematically stacking storage on a single wall, over and under fixtures, and using the top and side of it for other purposes should be explored in your planning.

Furniture Solutions

You may choose to provide minimum built-in storage and rely on furniture that includes it. This could include tables with drawers, beds with footlockers and drawers, armoires for clothing, or coffee tables that have chest storage. This assumes the tenant will purchase the furniture or you will provide it. Remember that furniture with storage will weigh more making it harder to move around.

Outdoor Storage

Do not forget that your "outdoor rooms" can include storage for less frequently used items. Tool sheds, lockers, cabinets, and storage benches can add considerably to storage opportunities for tenants.

Attic and Loft Storage

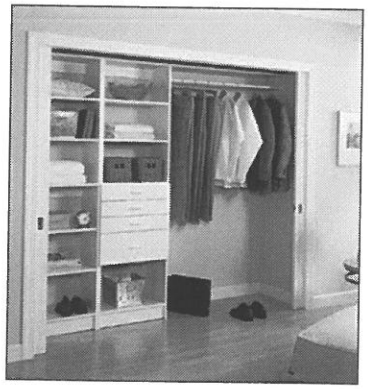
You may choose to create an attic for the ADU by providing access to space above the ceiling joists. This will require joists deep enough to carry the weight. If you want to do this, make sure your architect, designer, or contractor has planned for it. If you open the ceiling all the way up to the rafters, you may also create a loft storage area over the kitchen, bathroom, sleeping or closet areas.

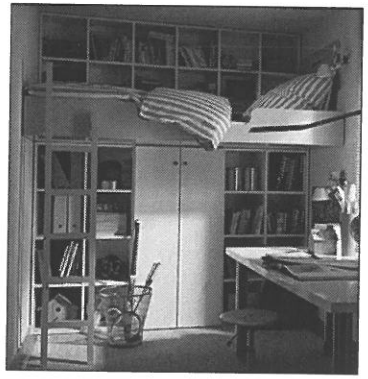
Lessons Learned from RV and Boat Living

Boat and recreational vehicle designers have already developed a number of solutions for living in small spaces. You might want to visit an RV dealership to see what some of those solutions are. How do they provide space to sleep, feed and entertain four people in the same amount of space as your ADU? What kinds of storage ideas help them do that?

Built-ins

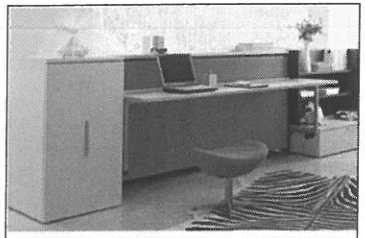
RV and boat designers are very specific about what items will be stored. They consider every little in-between spaces and voids as valuable solutions to storage. They have overlapping door swings and drawer pulls and anticipate where you will stand, sit, and walk. Work surfaces and tables fold out over

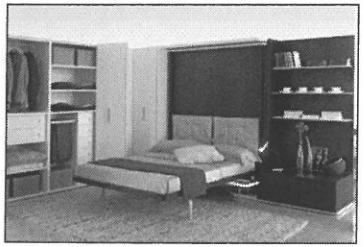




Above: Storage Systems

Plan closets and vertical shelving to make the most out of available space. Use limited floor space multiple times by stacking.



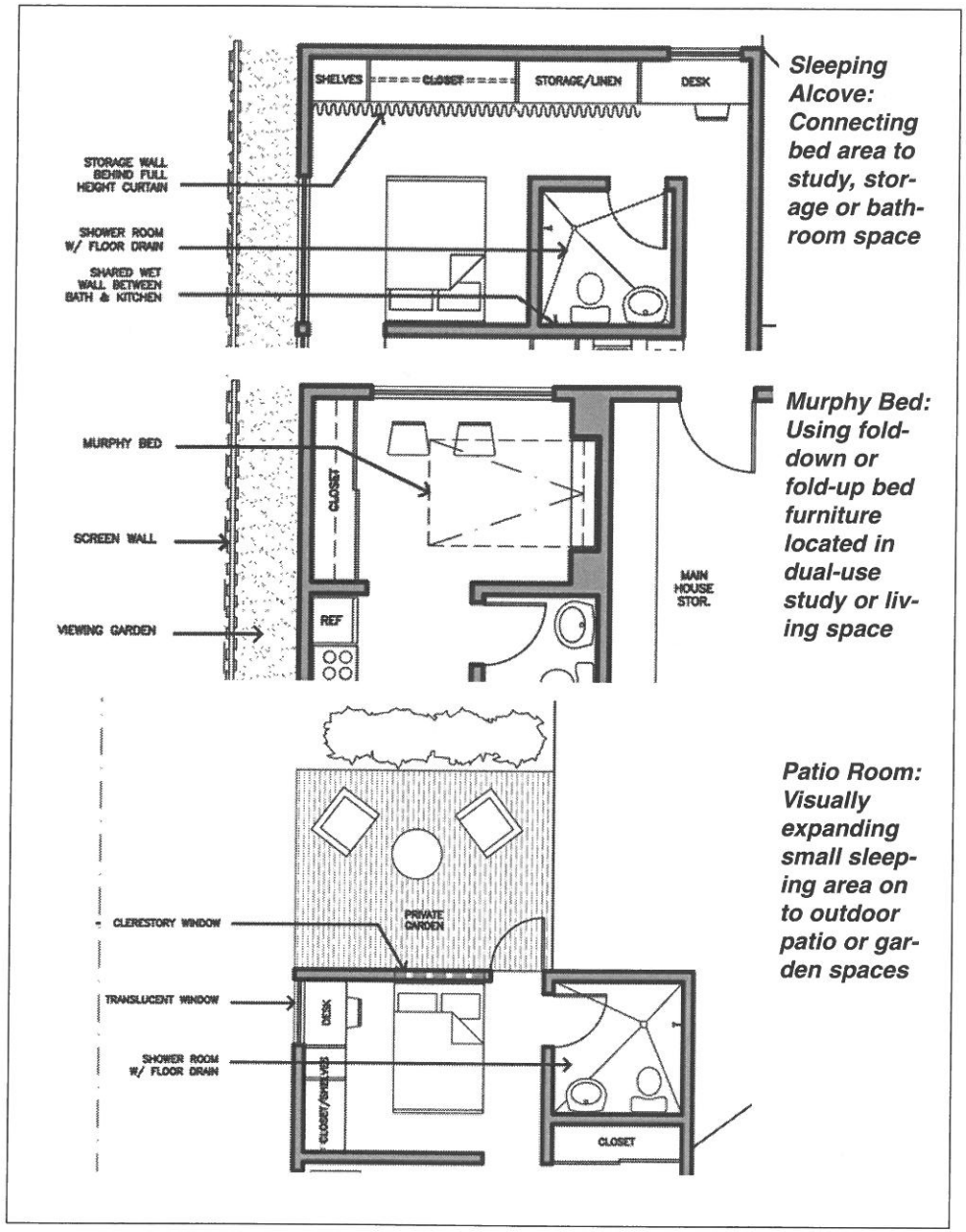


Above: Versatile Furniture

Get dual-use out of rooms by using folding beds (desk bed and murphy bed shown).

Right: Creative Floor Plans

Design floor plans with sleeping alcoves, dual-use space, or outdoor spaces to get the most out of your ADUs sleeping area.



Sleeping Alcove: Connecting bed area to study, storage or bathroom space

Murphy Bed: Using fold-down or fold-up bed furniture located in dual-use study or living space

Patio Room: Visually expanding small sleeping area on to outdoor patio or garden spaces

seating that includes storage.

Sleeping
Beds are located on top of storage areas and include storage cubbies for small items in the walls. Footlockers and bunk beds are getting double use out of floor space.

The Roof
The RV or boat may also include roof or deck storage and exterior storage compartments. You may not strap a surfboard or canoe to the roof of your ADU, but you can consider an attic, rafter storage or bench storage on the patio.

Creative Sleeping

Creative sleeping arrangements can save space. A typical king-size bed with access on two sides requires about 63 SF, or over 15% of a 400 SF ADU–just for the bed. Now, add a dresser, bedside table and a chair. And, maybe you want privacy. Before you know it, a quarter of the space is for sleeping. So, how would you create a plan that gets more use of sleeping space?

<u>Building Flexible Sleeping Areas</u>
Instead of building a separate bedroom, consider creating a sleeping alcove with loft storage above it and drawers under

it. This could be defined by creating a dividing wall that includes shelving. It can be designed to serve as a daybed as well. Make it a dual-use space and devise flexible methods for privacy screening.

Sleeping Niches
Designing a corner of the ADU as a sleeping and study niche can get dual use out of the same space. For example, you could design a folding desk into the space that serves as a bedside table and writing surface. Additionally, the walls could be lined with bookshelves.

Movable Screen Walls
To provide privacy without building a wall, consider folding screens and rolling walls, so that the entire space can be opened up for guests or daytime use. Build low walls around a sleeping area that includes shelves. It can provide some privacy and leave the room open to the ceiling.

Flexible Furniture
Another solution for creating a sleeping space that does not take up much space or can be a dual-use space is to buy furniture that can be stored or used for another purpose.

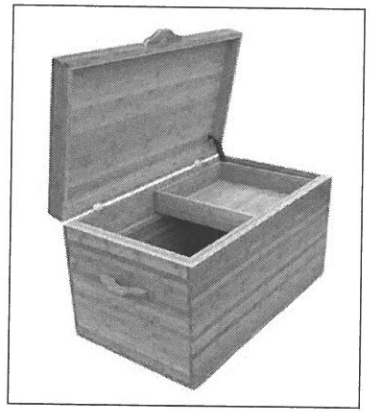
Hide-A-Ways
Small units are a trend in urban living, and loft furniture is being designed for live-work units. Roll-away beds, Murphy beds, and other types of solutions are popular ways to get the most out of small living spaces.

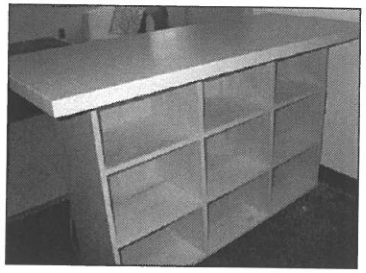
Dual-use Beds
Futons, sofa beds, and daybeds are examples of how beds can transform into another type of furniture requiring less floor space. These are also ways to make room for guests.

Privacy
If you value visual privacy while sleeping, consider where you place and orient your sleeping area and various methods for screening it.

Line-of-Sight
Consider the location of windows and shared spaces. If other people walk past your ADU, make sure their views are not directed at private areas, such as the bed and bathroom. Think about what people will see when they enter your unit. Are the private areas hidden or well screened?

Curtains and Folding Panels
Using curtain dividers, fabric panels, and folding track walls can provide flexible privacy screening. Rolling wall panels and pocket doors can be used to provide temporary division of spaces as well.





Above: Flexible Furniture

Use storage chests that double as seating or counters and work surfaces that include storage.



SECTION FOUR: Creating Private Outdoor Space

The quality of a small living space can be greatly enhanced by making outdoor spaces, such as yards, gardens, porches and patios, part of the design. In this section, we discuss how to make the ADU entry welcoming, ways to organize outdoor spaces, and tools for protecting the privacy of neighbors and tenants.

A Welcoming Entry

The front door of any house says a lot about the quality of life and social status of the resident. How you find the front door for an ADU, the design of the entry and porch, and the related landscaping are all part of the entry solution.

Distinguishing the ADU Entry

When your tenant comes home in the evening or they have a friend that stops by, how do they find their way to the ADU entry? It may be a simple thing to do if the unit faces and is visible from the street. If the garage is in the back yard, then finding it may require providing some clues. Providing a dedicated walkway, an entry gate, and visual access to the unit can demarcate its location. Low-cost solar-powered yard lights can also help delineate a path to the ADU.

For attached garages, changing the color of the door, porch, and the ADU itself can help distinguish it from the main house.

Porches and Front Doors

As in any building, you can make an entry statement for your garage conversion ADU. The entry can be designed as an outdoor room with sitting areas, concealed storage, and porch or canopy. This creates a more social unit and can increase opportunities to expand the outdoor living opportunities for the tenant. Architecturally, a porch, canopy, or changing the roof profile over the entry helps define the ADU and makes it easier to find.

Landscaping
Making your entry more welcoming is also a landscape opportunity. Changing the pattern of paving materials or geometry can define the pathway and outdoor entry and living areas. Providing accent planting, colorful ground cover, and flowering trees can be used to lead the eye and frame the ADU entry. Pathway and entry lighting make the entry safer and can highlight architectural and landscape design features in your plan.

Whose Outdoor Space?

When you add a tenant to your property, you should be considering what part of the yard is private for both you and your tenant and what is shared. The location of your garage, shape and size of your lot, and existing landscape features are some of the considerations for planning your outdoor spaces.

Types of Yards
Different types of garages have different types of opportunities to capture outdoor living spaces. Attached garages may have narrow side yards and small front yards shared with parking, but also a generous rear yard for a patio or garden. Detached garages located in the rear yard could be planned with a garden entry and side patio. Corner lots provide an opportunity to create a separate front yard and connected patio or garden on the side or rear yard. Alley garage conversion ADUs could be planned with a rear garden shared with the main house, a side entry yard or garden, or connected private patio and porch space.

Private and Common Spaces
When defining opportunities to create outdoor living spaces, consider how they will be used and by whom. Will the space contribute to the design of your entry? Is it a private and visually separate patio used only by the tenant? Is it a back yard and garden physically or visually shared by the main house and ADU? Who will have access to the space and maintain it?

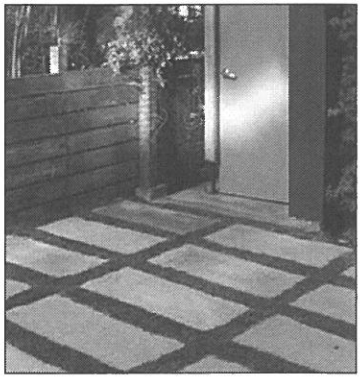
Indoor-Outdoor Spaces
Spaces that are directly connected to the main house and ADU extend the visible and functional space for the resident. Decks, patios, gardens, and yards become outdoor rooms by extending the plan geometry, materials, and views.

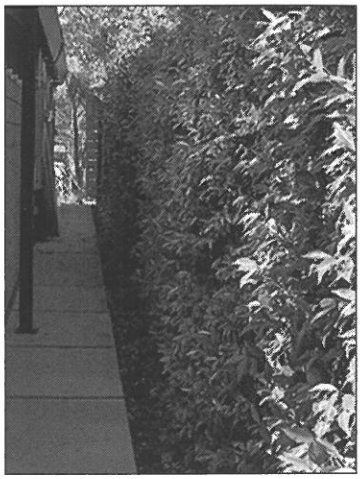
Screening for Privacy of Outdoor Spaces

In Section Three, we discussed the need to plan garage conversion ADUs with the privacy of tenants and neighbors in mind. The visual access and orientation of spaces, fences, walls, and landscaping can all be used for defining and screening outdoor spaces.

Orientation–Defining Territory
Defining the front of the ADU usually means identifying the side that is most public. In an attached unit facing the street, placing the front door towards the street reduces impact on neighbors and provides eyes-on-the-street security. In side and rear yard ADUs, facing the entry where it can be seen from the front helps way-finding and security. For alley ADUs, making the alley the address reduces intrusion of visitors and tenants through the main house's yards. After defining the "front" and public orientation of the ADU, you can make better decisions about private and common outdoor spaces.

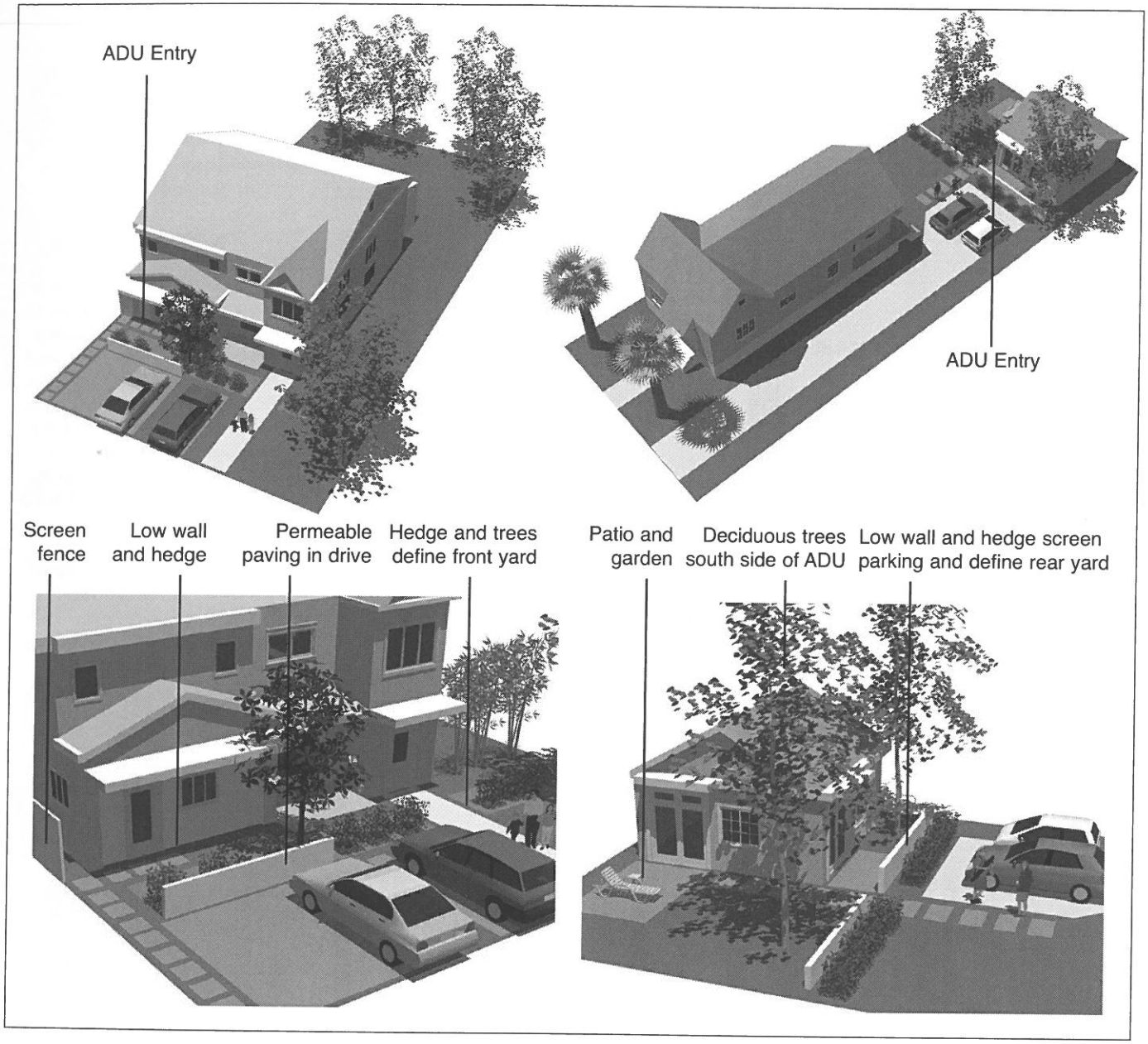
Fences
In single-family neighborhoods, fences are most often used to protect privacy and security for backyards. In front yards, low fences define public, semi-public and semi-private spaces. The proverbial white picket fence plays this role. Adding fences to the interior of the lot has to be done carefully with the same types of functional considerations. If it is intended to define space but provide visual oversight of a yard, then a low fence is appropriate. If you





Above: Landscape Materials

Using pavers that provide a Permeable surface and hedges instead of fences also creates a softer looking and more natural setting for your ADU and house yards.



need to screen a private patio or parking area, an opaque fence, lattice, or trellis can be used. Remember, taller fences impact the amount of sun you get and the shape of your yard, making it seem smaller. Think about how your fences will work with your landscaping plan.

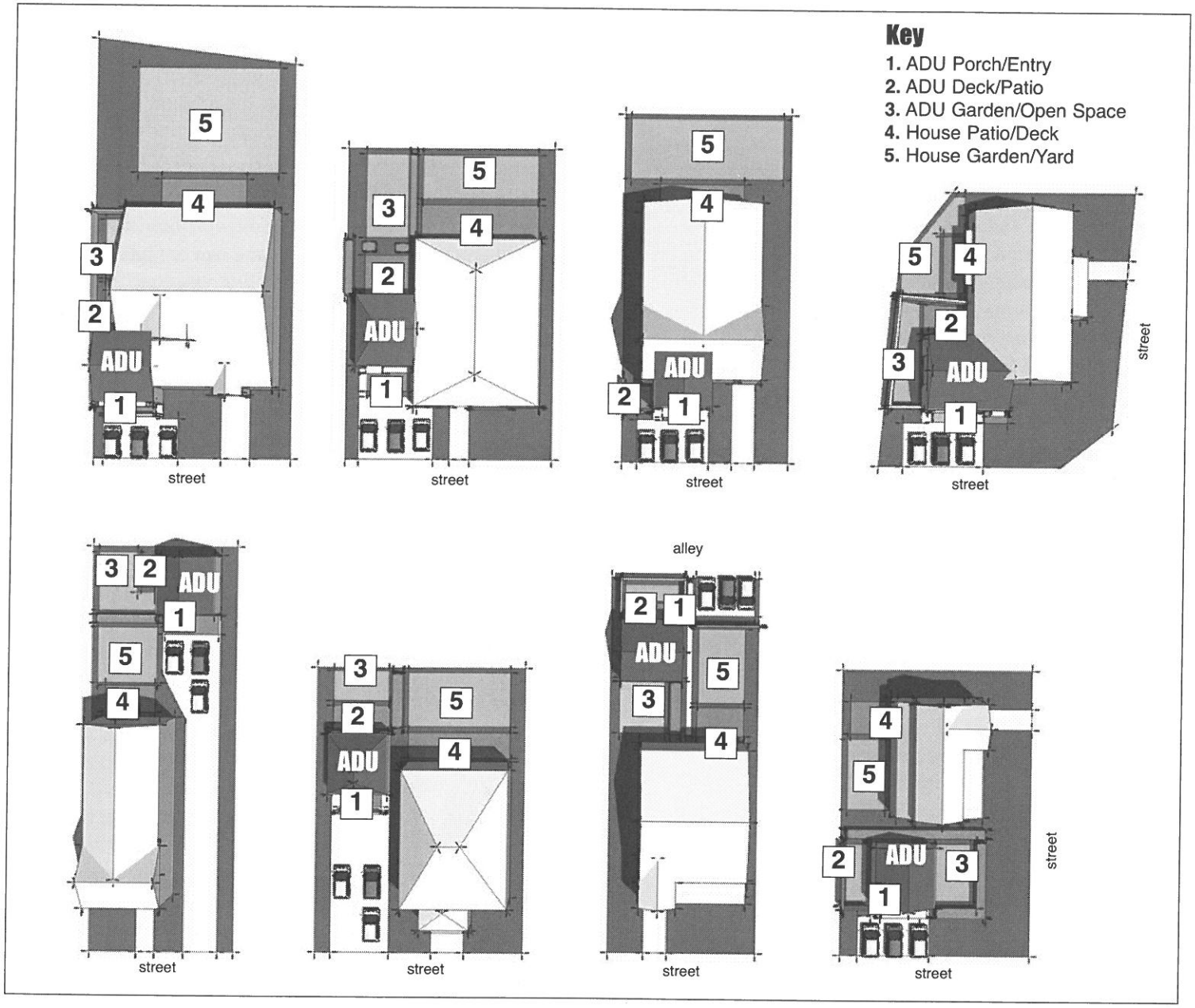
Landscaping

Landscaping can be used to define and screen outdoor spaces. Low shrubs can define boundaries. Taller hedges, trellises, and trees can provide filtered or screening views from private outdoor spaces or protecting the privacy of neighbors. Choose plants that add to the color and character of your outdoor spaces and serve the practical maintenance needs of you and your tenant. Your local nursery can help you do this.

Left: Landscape Concepts

These diagrams illustrate how pant material and paving define yard areas and enhance privacy. Tree planting should consider sun access in winter months and the need for shade.

Creating Outdoor Spaces

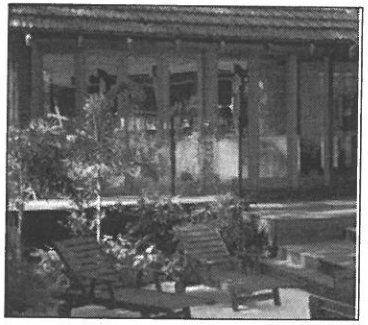


Left: Outdoor Spaces

These diagrams indicate the types and locations of outdoor spaces that can physically and visually expand the interior spaces for ADU tenants and homeowners.

They employ the following principles:

- ***Provide outdoor spaces in locations that are visually connected to the ADU and living spaces in the house.***
- ***Screen ADU tenant spaces from neighbors and home owners using well-designed fences, hedges, trellis or other garden landscaping features.***
- ***Provide access to service areas, parking and shared yards for homeowners.***
- ***Screen homeowners, neighbors and ADU residents from parking.***



SECTION FIVE: Sample Floor Plans

In Section Five, we provide sample plans for various types of garage conversion ADUs. Each example provides a summary of site, orientation, parking, and floor plan. As discussed in previous parts of the manual, you have to consider both your own and your tenant's needs. However, these can help you kick-start your thinking about your ADU.

Sample Floor Plans:

ADU 1: Suburban Front Attached

ADU 2: Suburban Side Attached

ADU 3: Suburban Under Attached

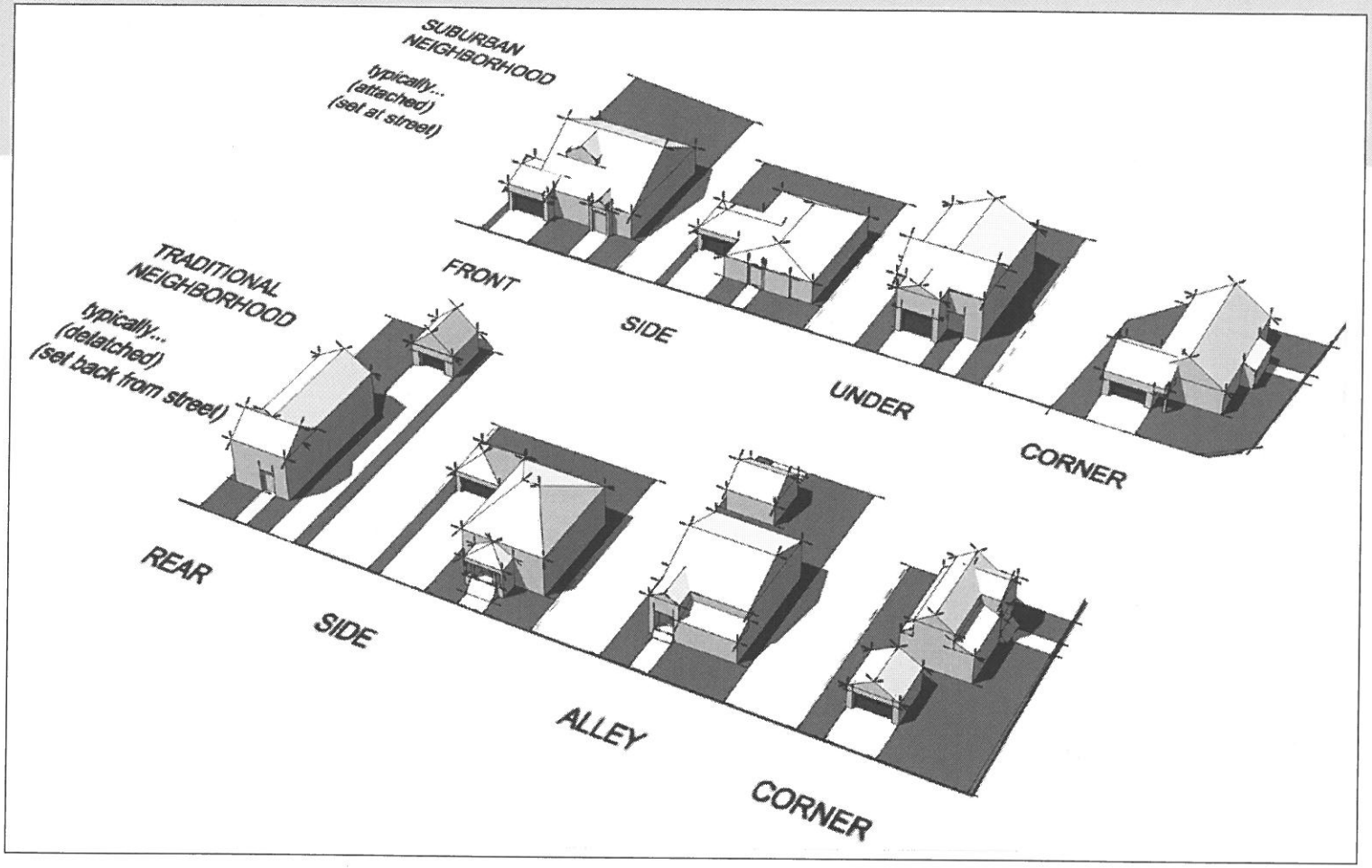
ADU 4: Suburban Corner Attached

ADU 5: Traditional Rear Drive Detached

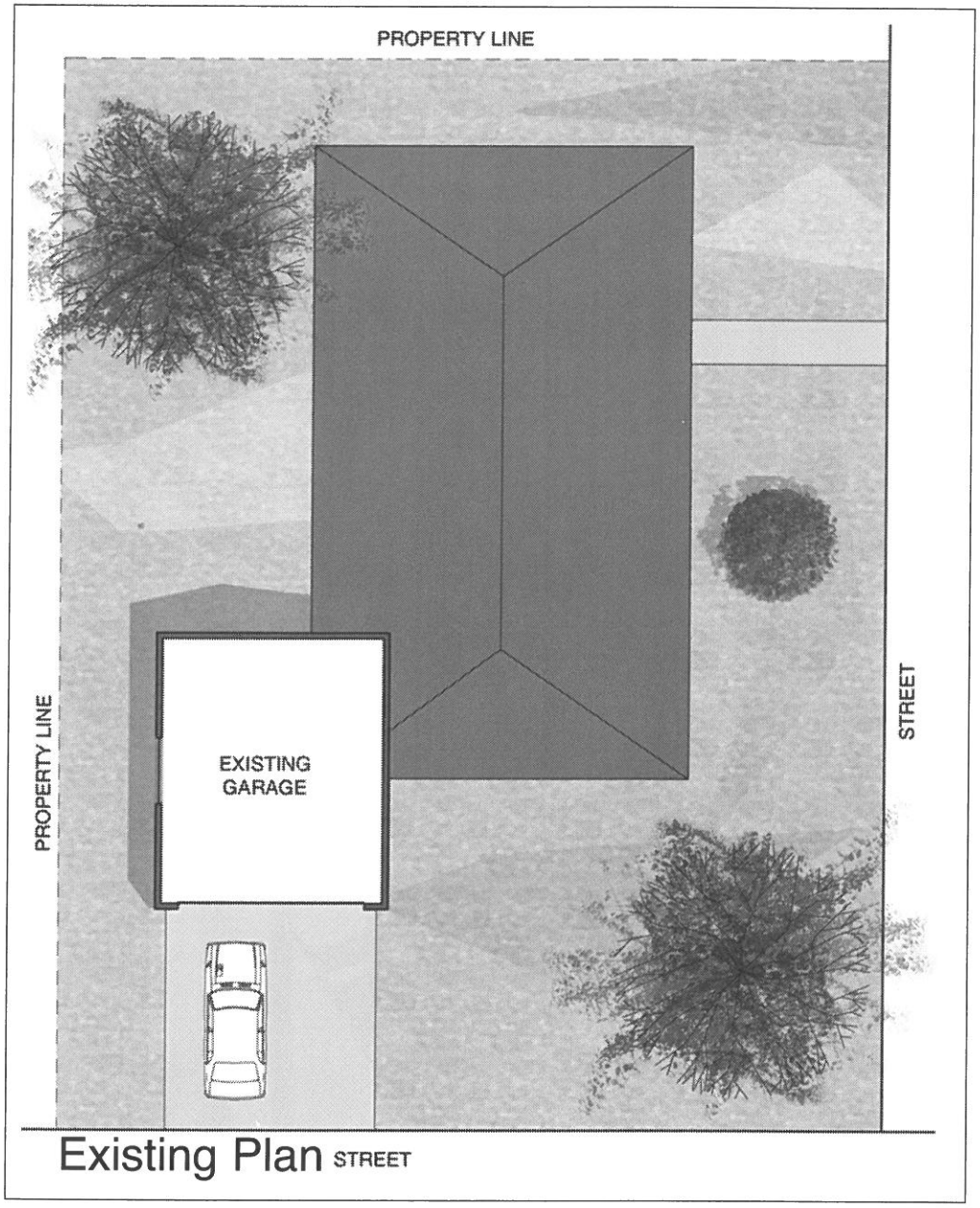
ADU 6: Traditional Side Detached

ADU 7: Traditional Alley Detached

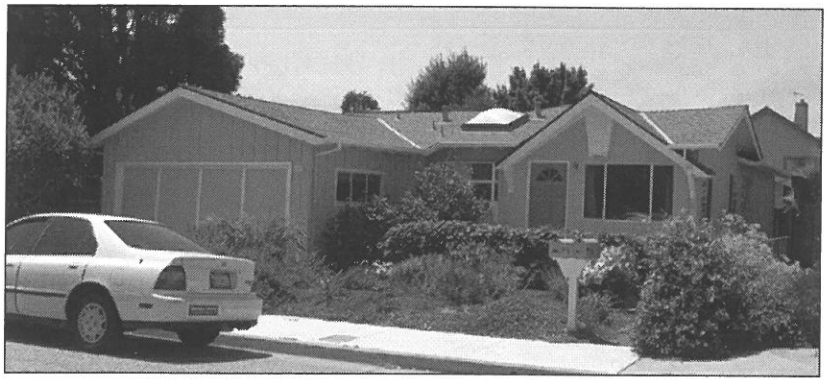
ADU 8: Traditional Corner Detached



ADU 1: Suburban Front Attached



Existing Plan



Suburban Front Attached

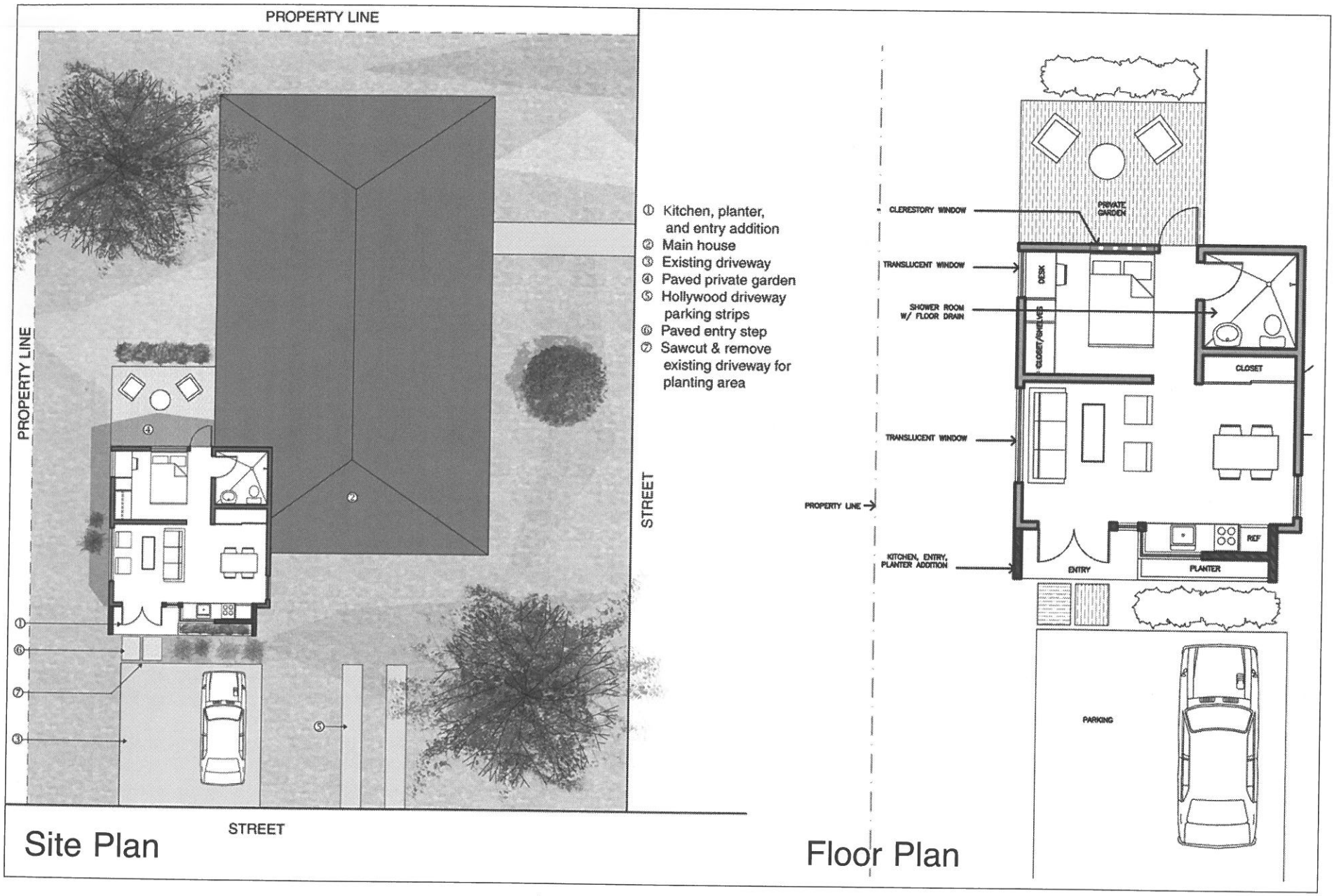
Site: This site includes an attached garage, oriented toward the front yard, with the ADU entry set close to the street. The side yards are narrow, though additional space is gained behind the ADU. A screen wall is placed along the ADU side property line for privacy.

ADU Orientation: The ADU maintains the existing garage orientation, facing the street.

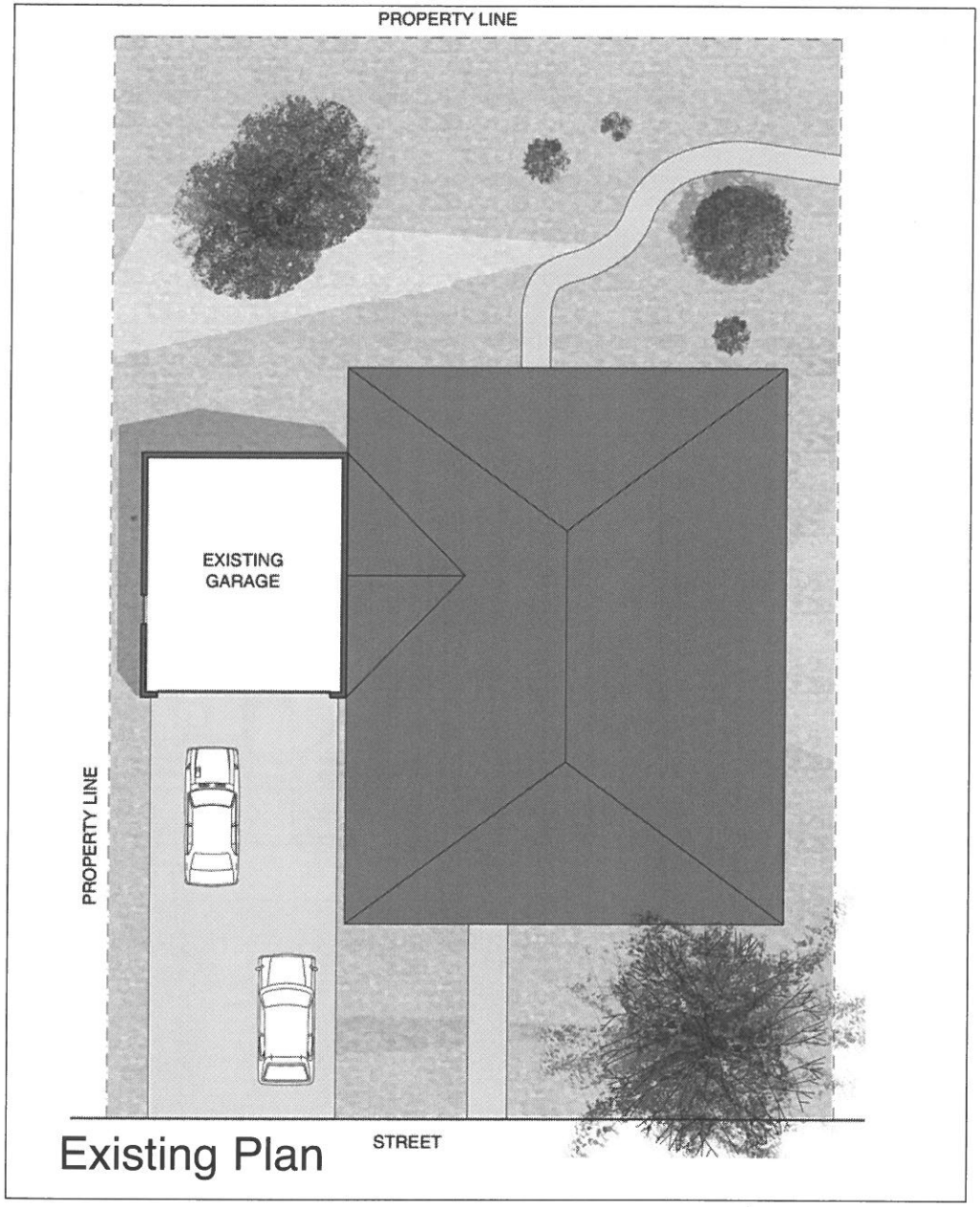
Parking: One space in the existing driveway is dedicated to the ADU, with Hollywood driveway parking strips added adjacent to the driveway.

Plan: This design recesses the front door to allow for a more gracious entry and small "front porch". The living room is open to the porch and kitchen overlooks the entry area. The bedroom is placed in rear to provide for better views and access to the rear garden terrace. The sleeping area can be made private by drawing a curtain and the bathroom is placed in the one windowless corner and adjacent to the main house where to existing plumbing lines may be more easily accessible.

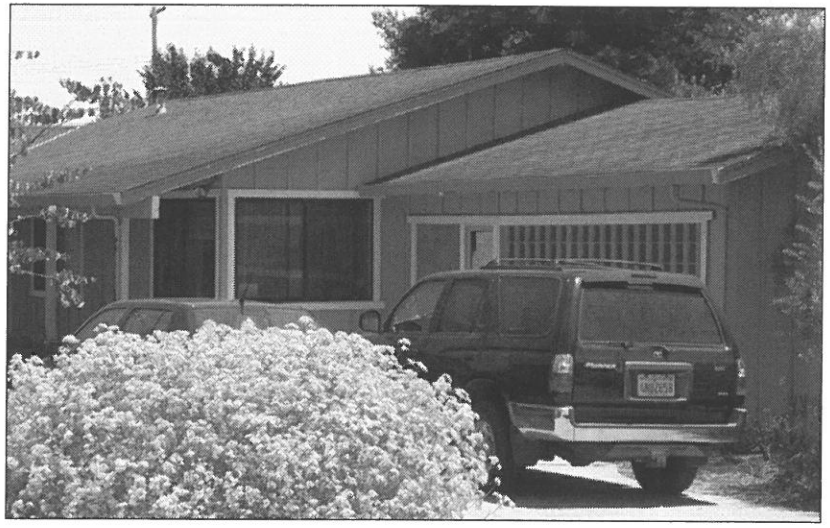
EXAMPLES ONLY. NOT FOR CONSTRUCTION.



ADU 2: Suburban Side Attached



Existing Plan



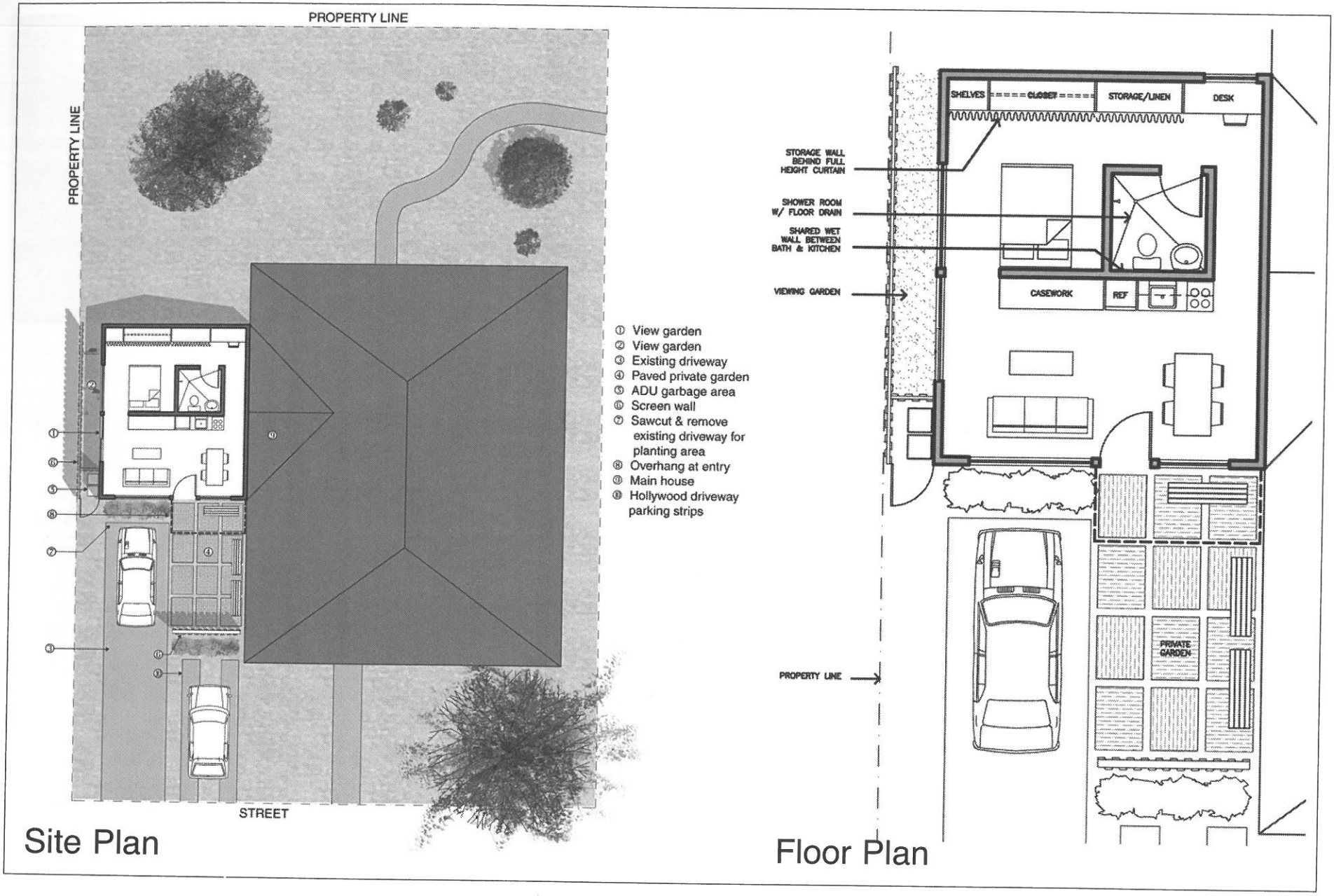
Suburban Side Attached

Site: This site includes an attached garaged, set back from the street and the front facade of the house. The garage is oriented toward the street. A screen wall is placed along the garage side property line for privacy.

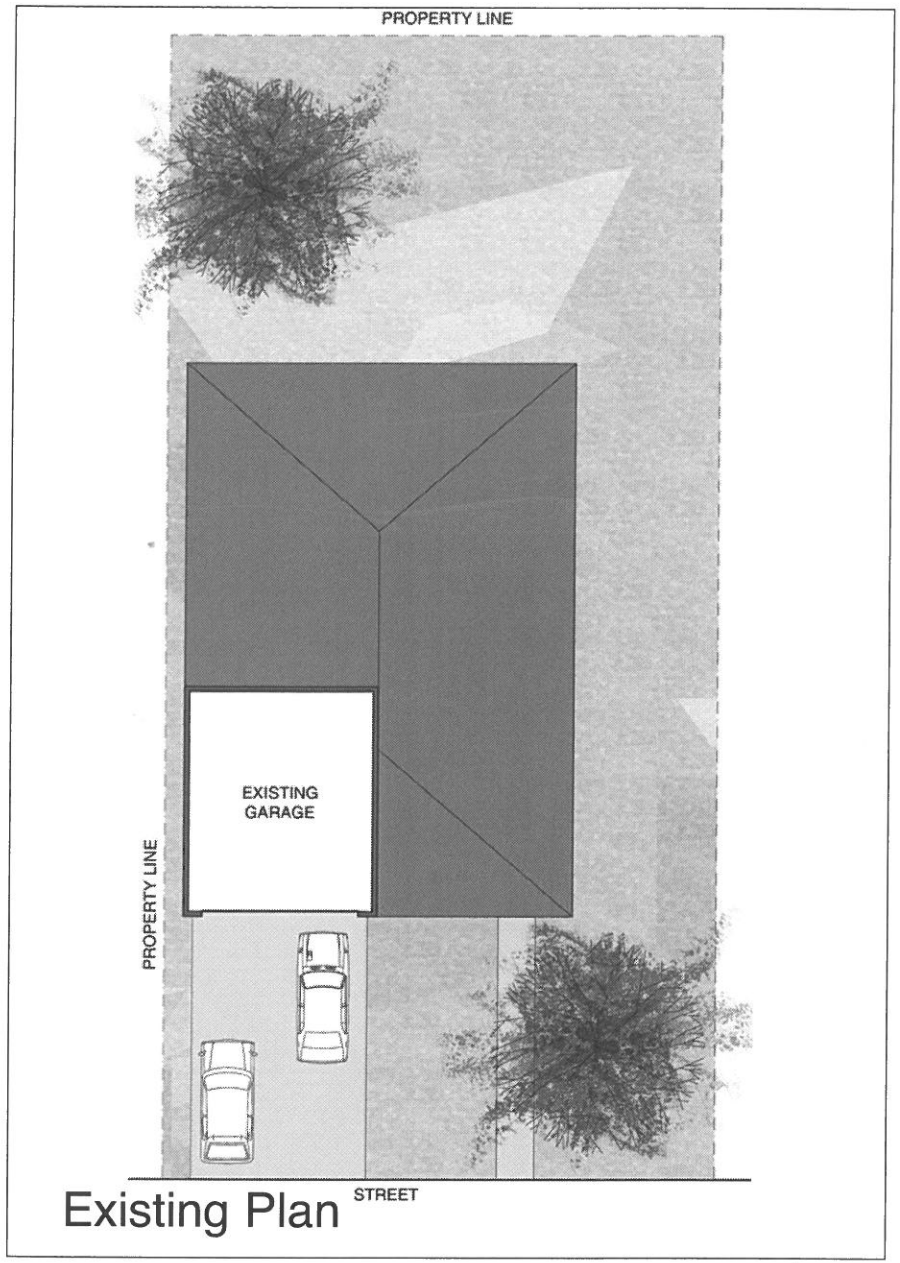
ADU Orientation: The ADU maintains the existing garage orientation, facing the street.

Parking: The double driveway is converted to one lane of tandem parking and another employing Hollywood driveway parking strips.

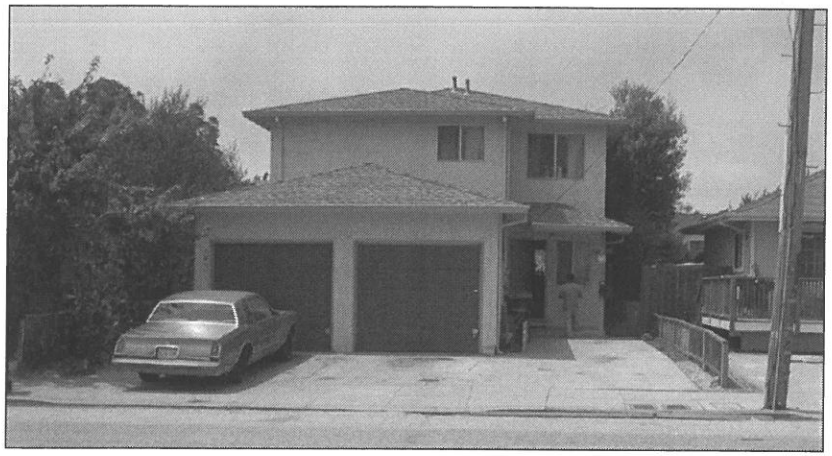
Plan: This design offers a generous semi-private front terrace. The bedroom and bathroom are placed at the back of the unit with limited visual access to the main house's rear yard. In order to make the interior appear larger and provide more natural light, the side of the unit has a narrow viewing garden, made private by a screen fence along the property line.



ADU 3: Suburban Under Attached



Existing Plan



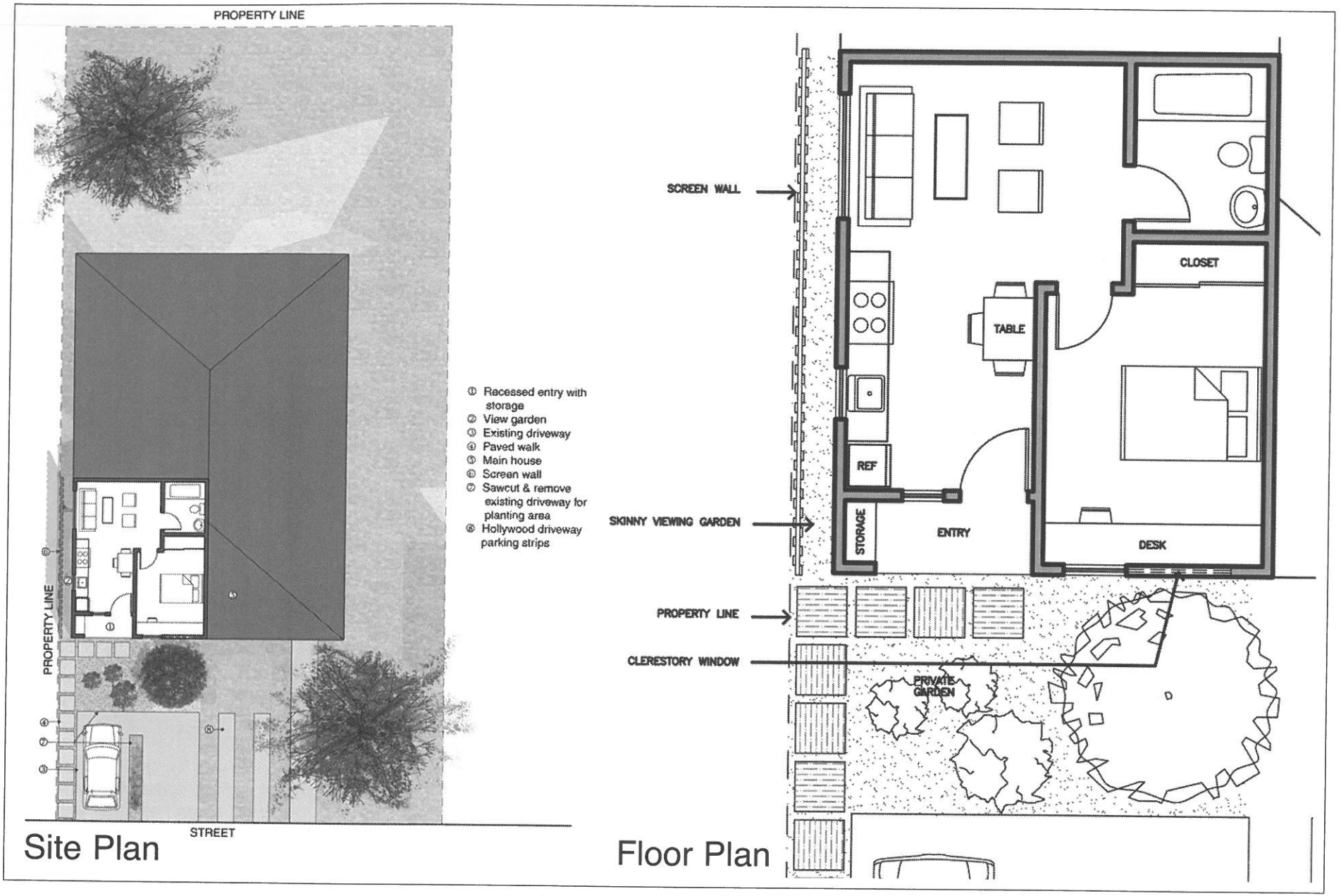
Suburban Under Attached

Site: This site includes an attached garage within the envelope of the house, flush with the front facade. The garage is oriented towards the front yard.

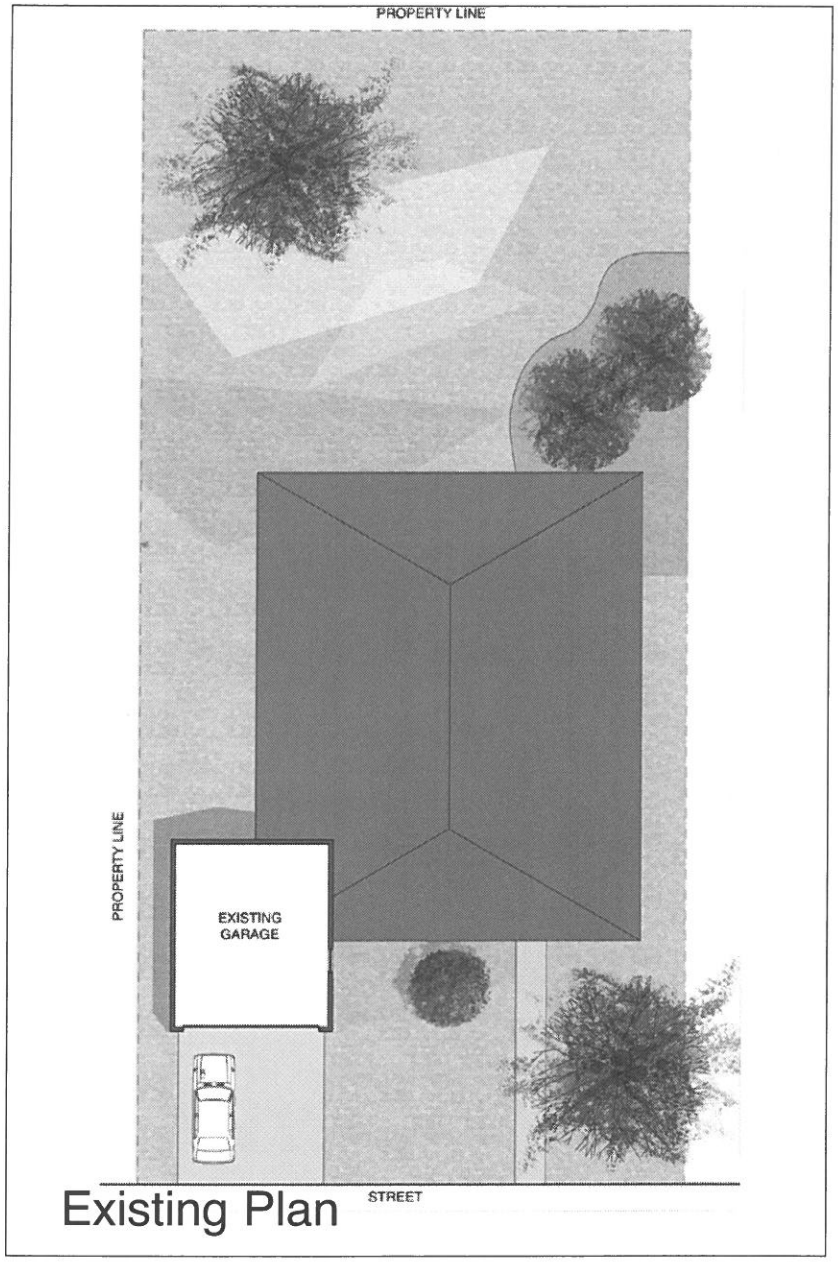
ADU Orientation: The ADU maintains the existing garage orientation, facing the street. The ADU has its own front "porch," with the entry recessed.

Parking: A strip of planting is added to the existing driveway. Hollywood driveway parking strips are added parallel to the driveway.

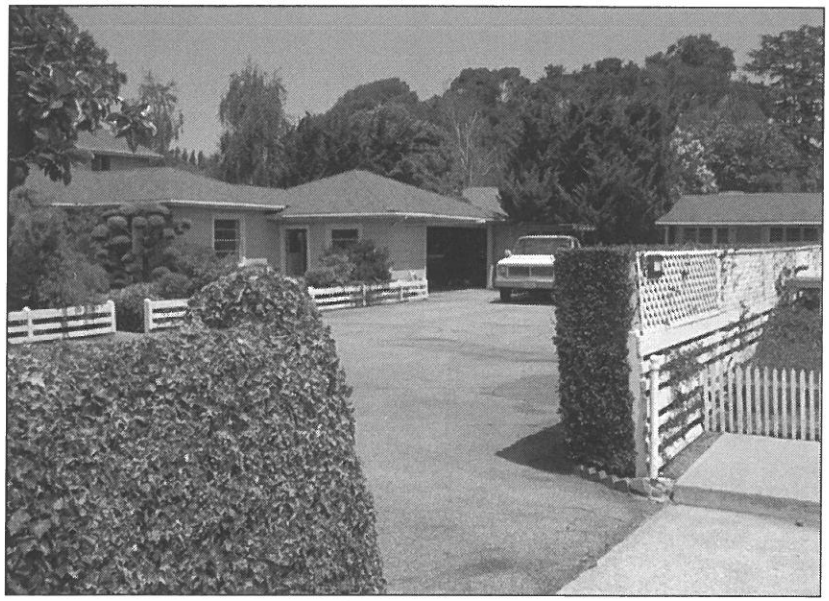
Plan: The primary living spaces are placed along the outside walls, as this layout only allows natural light from two sides. Where possible, the landscape is improved adjacent to these exterior walls. A thin viewing garden is placed along the property line with a corresponding privacy screen and a planted area in front of the new unit provides a buffer from the parking area. The entry is recessed to create an identity for the new dwelling and cover from the elements. The small area to the left of the front door can be used for storage or a small bench.



ADU 4: Suburban Corner Attached



Existing Plan



Suburban Corner Attached

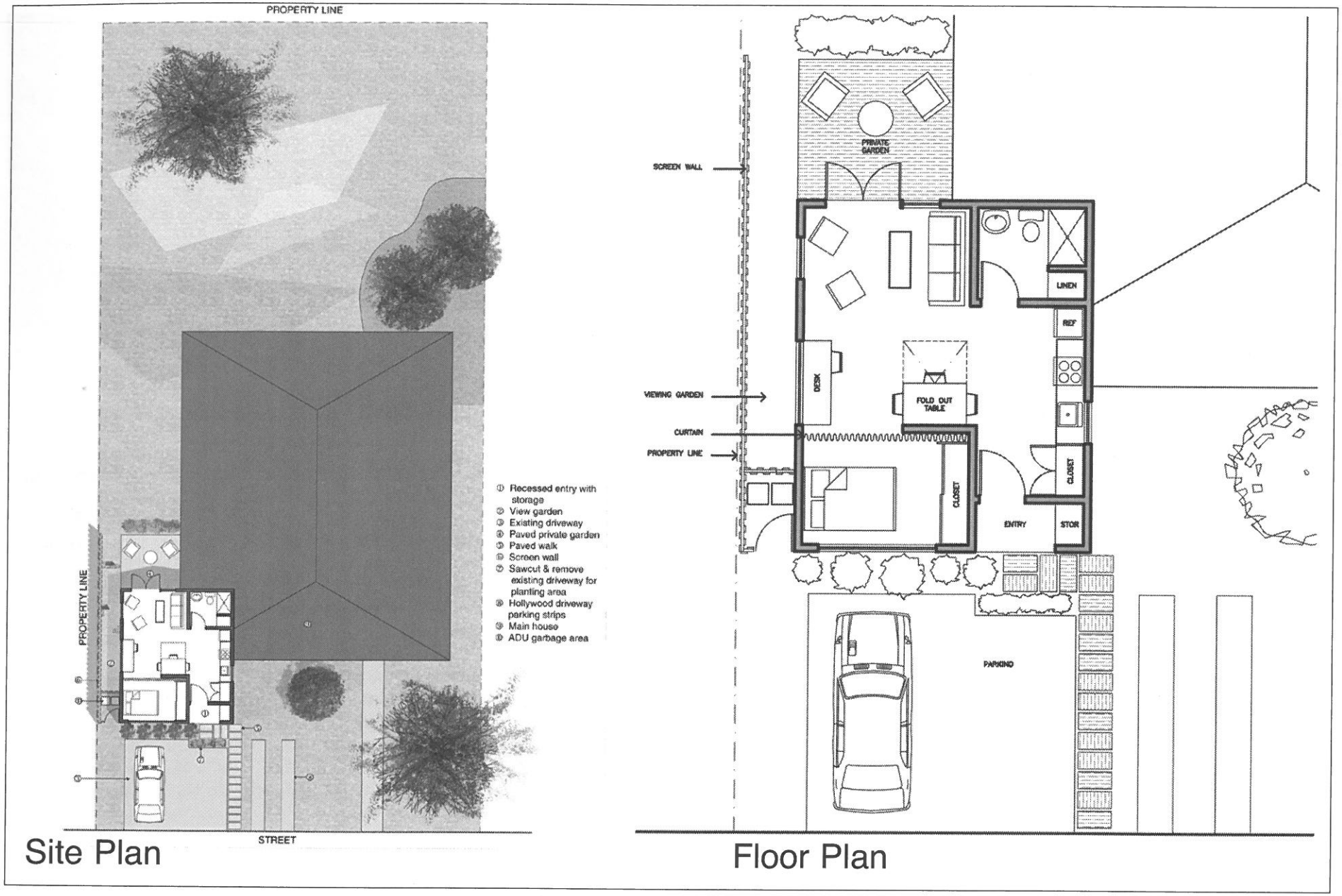
Site: This corner site includes an attached garage, oriented towards a side street.

ADU Orientation: The ADU opens up to the paved driveway in front and to a paved patio area in the back. The ADU has a generous side yard that remains open for both dwellings to use.

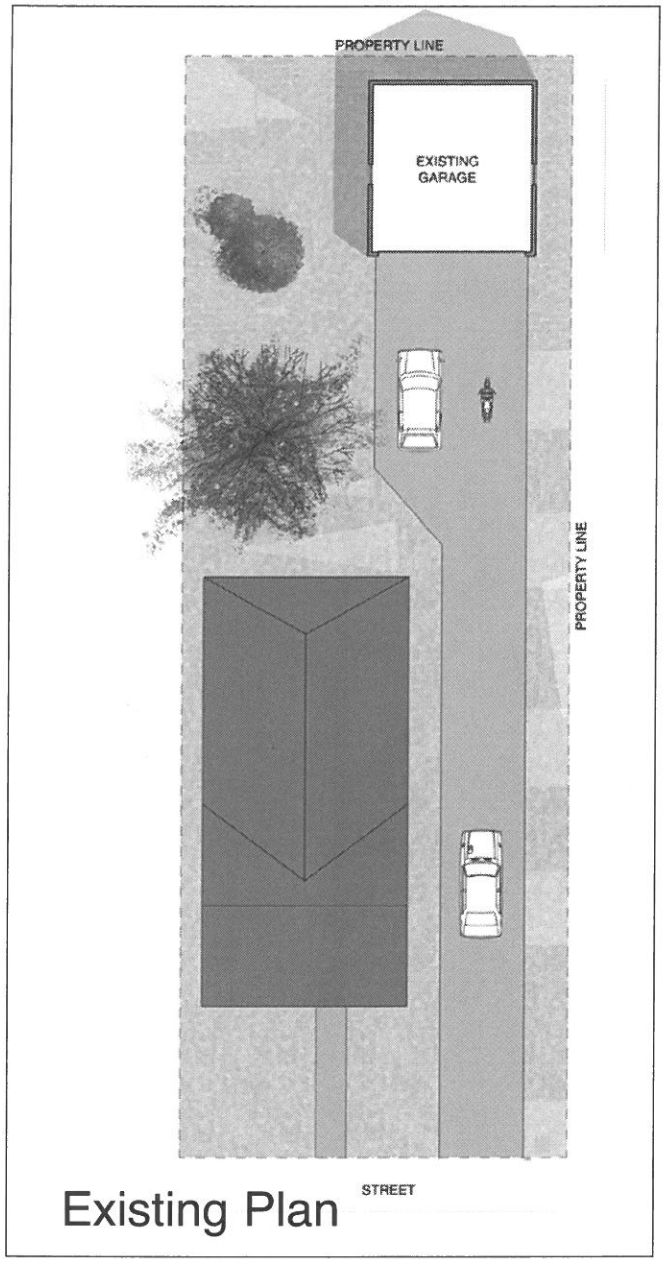
Parking: The driveway is maintained and Hollywood parking strips are added.

Plan: This plan has the sleeping area towards the front of the unit with a landscape screen and higher window to screen headlights of cars in the driveway. This unit has a rear garden patio that visually expands the living area. As with many other layouts, the new plumbing associated with the bath and kitchen are kept close to the main house where access to existing plumbing lines is likely.

EXAMPLES ONLY. NOT FOR CONSTRUCTION.



ADU 5: Traditional Rear Drive Detached



Existing Plan

Traditional Rear Drive Detached

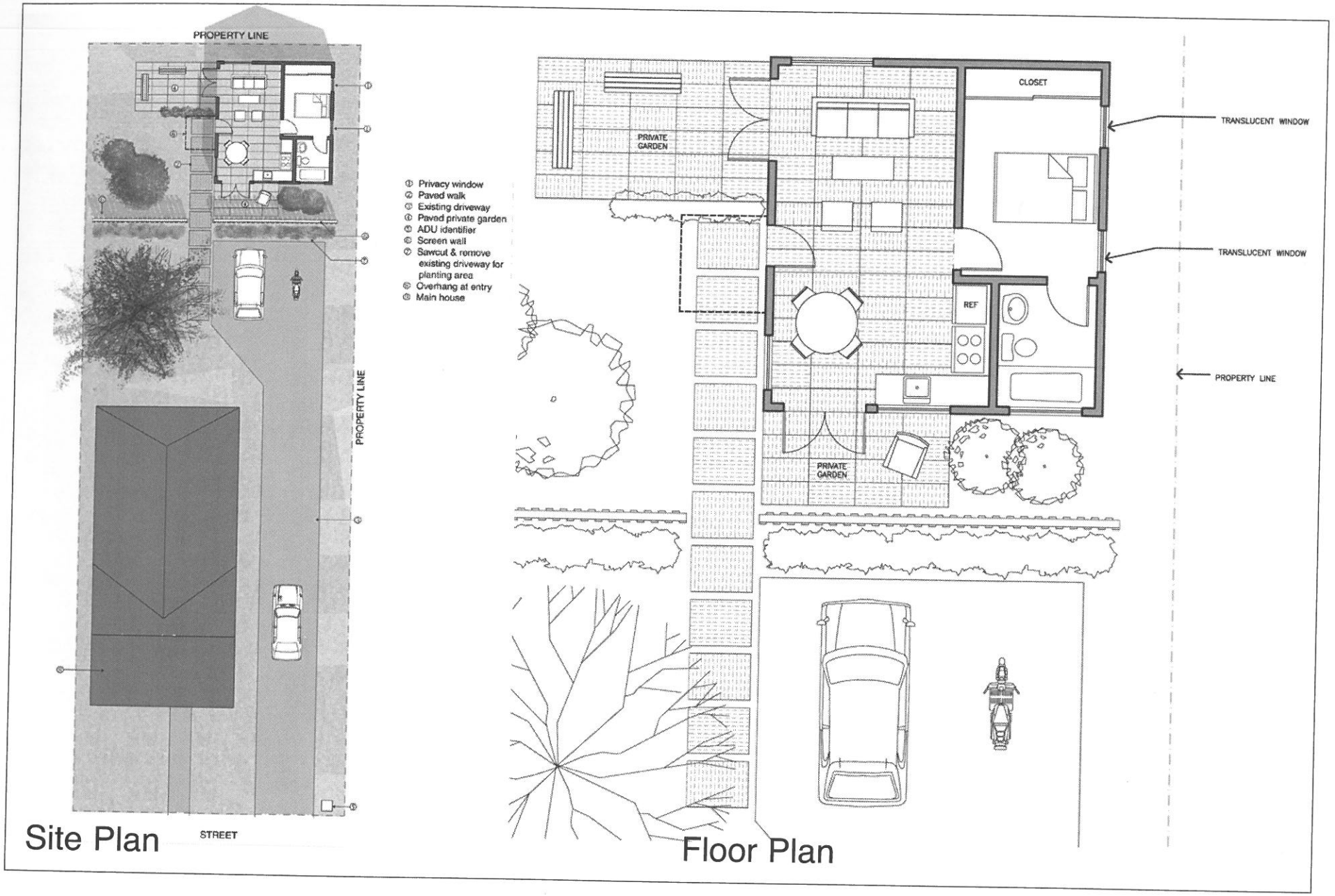
Site: This site includes a detached garage oriented, set back deep in the property, but oriented towards the front of the property.

ADU Orientation: The ADU is oriented towards the street with its own front yard and porch.

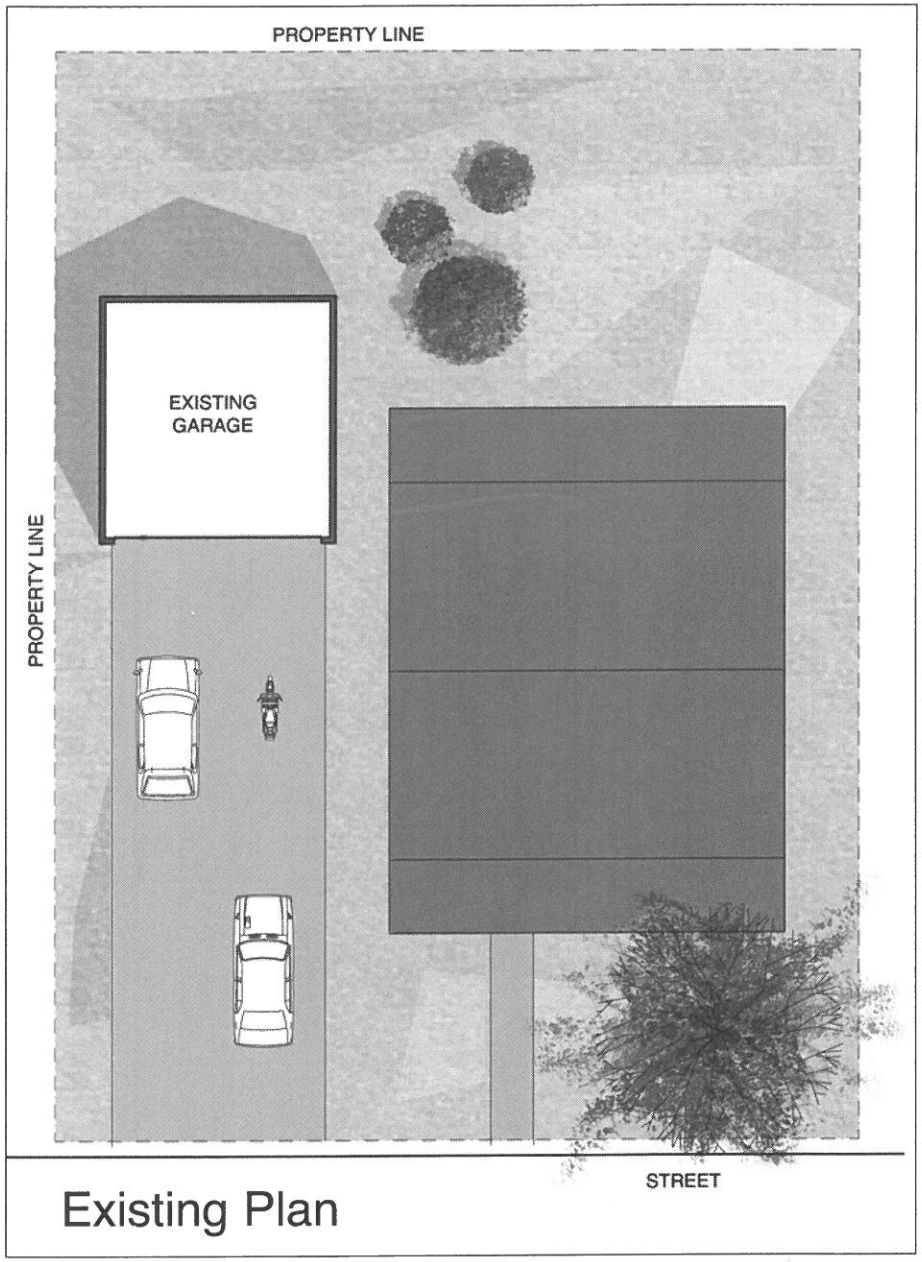
Parking: The driveway remains unchanged, allowing both side-by-side and tandem parking.

Plan: This position on the property makes it possible to treat the area around the new dwelling as nearly a separate property. A privacy screen wall runs across the width of the lot, allowing the new unit to open out to the surrounding landscape while maintaining privacy along the adjoining property lines. The flooring in the kitchen and living room is similar to the adjacent outdoor paved, making the indoor space appear more expansive. The interior opens to two paved outdoor areas with pairs of French doors. Like other ADU configurations, the living, cooking, and dining areas are all in one larger room, distinguished only by furniture placement.

EXAMPLES ONLY. NOT FOR CONSTRUCTION.



ADU 6: Traditional Side Detached



Existing Plan

Traditional Side Detached

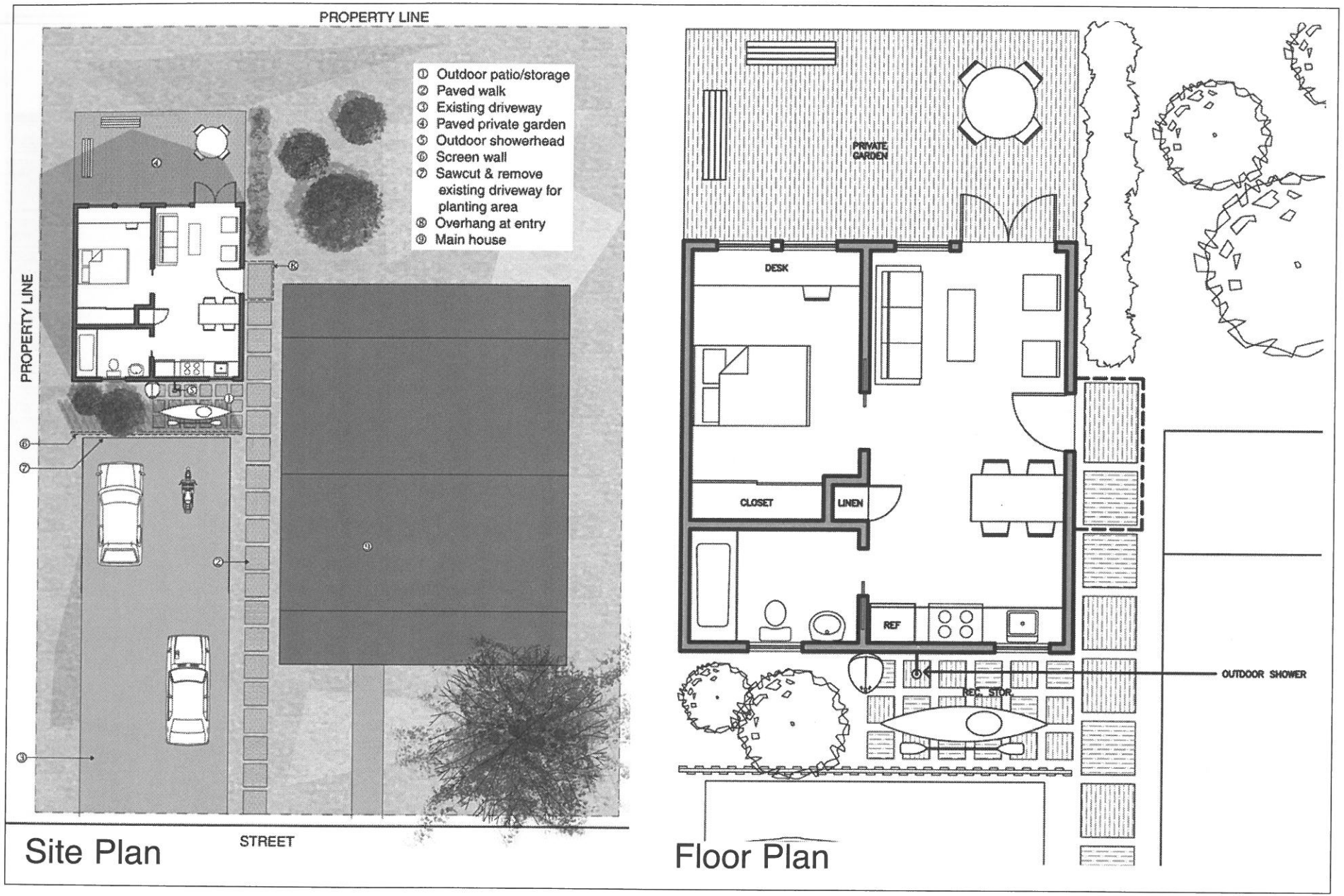
Site: This site includes a detached garage oriented towards the street, although the entry to the ADU is along the side. The garage is set back from the street and features a garden path approach.

ADU Orientation: The ADU is oriented toward the house and back-yard.

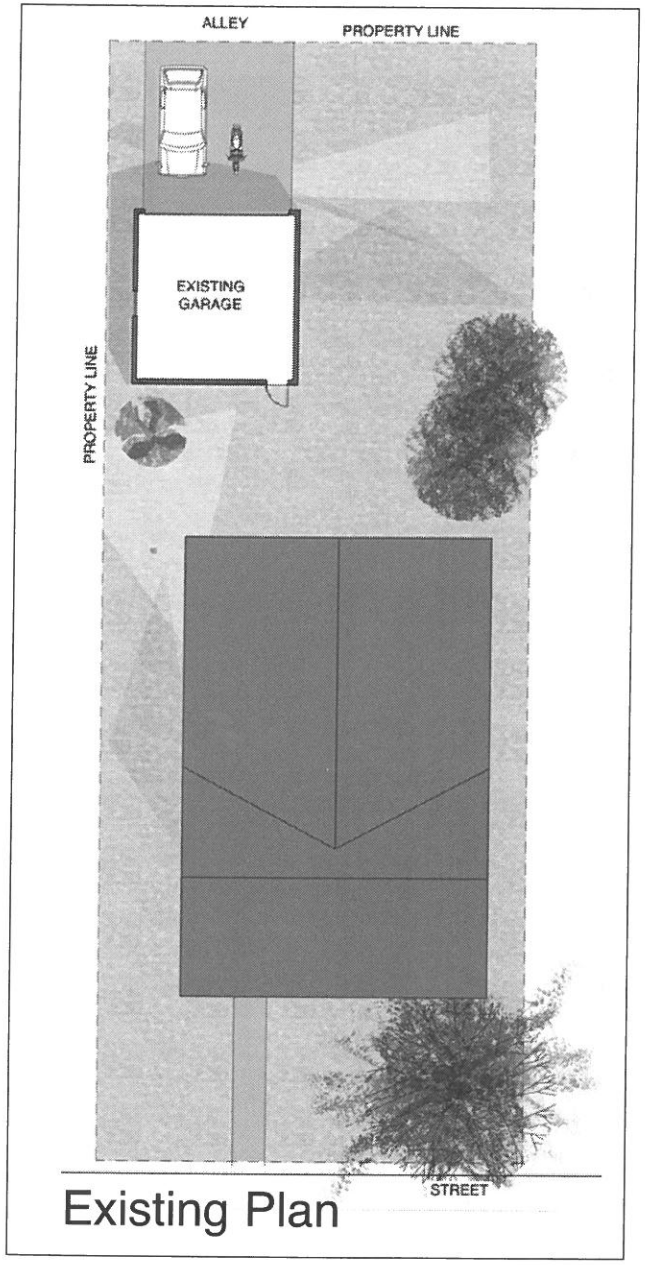
Parking: The driveway is only slightly reduced at the new dwelling, allowing both side-by-side and tandem parking.

Plan: This layout allows for generous spaces at the front and rear of the new unit. To maintain privacy, except for the entry, the side walls have no openings. All the other doors and windows open to the front terrace, which can be screened from the parking area with plant material or a privacy fence (as shown in this example), or the rear patio. The ADU has its own separate entry walk that gives it some needed street identity. The new dwelling's identity can be enhanced by adding a mailbox and street number at the sidewalk.

EXAMPLES ONLY. NOT FOR CONSTRUCTION.



ADU 7: Traditional Alley Detached



Existing Plan

Traditional Alley Detached

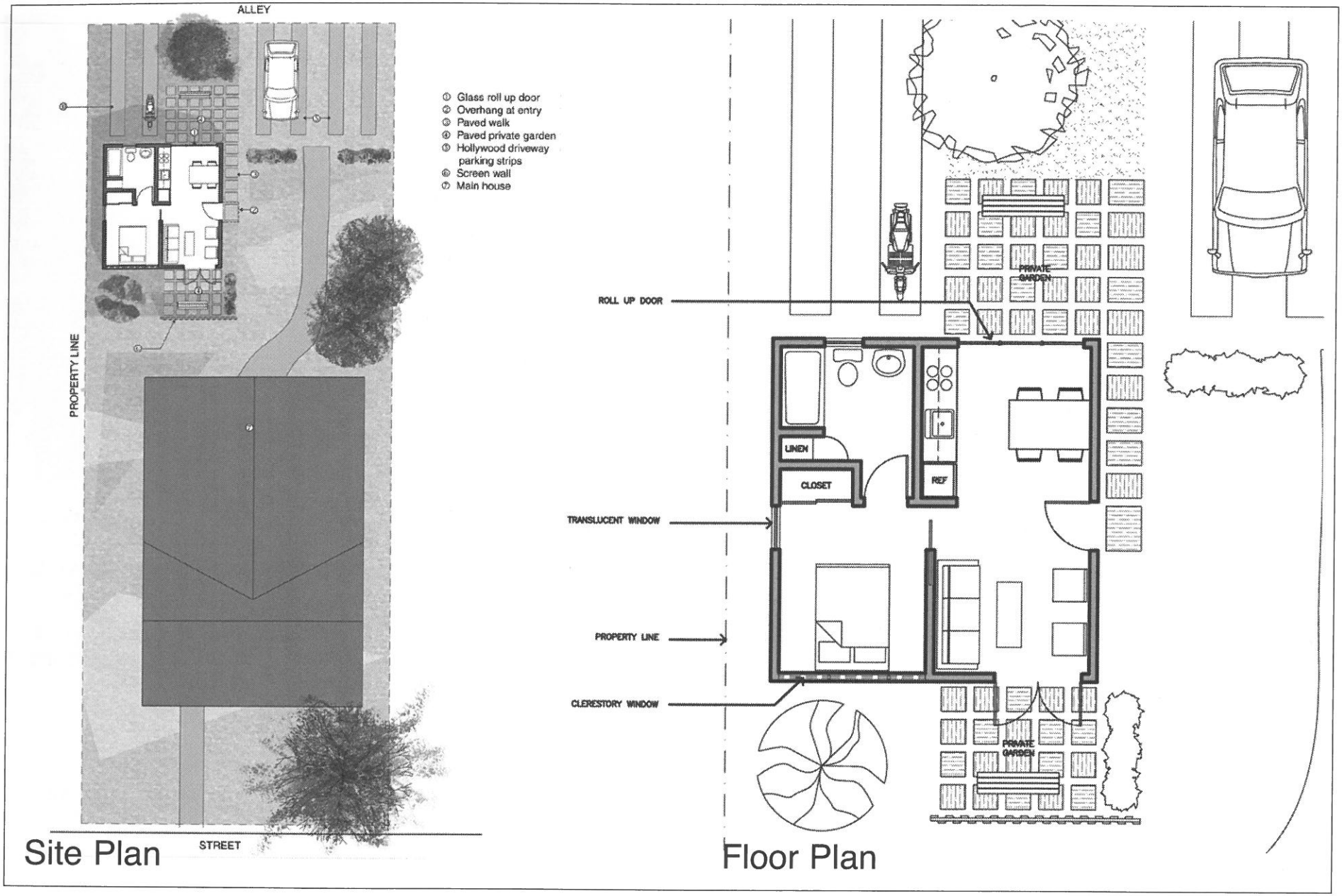
Site: This site includes a detached garage, adjacent to an alley. The ADU has no direct connection to the main street.

ADU Orientation: The ADU is oriented towards the side yard and alley, with its own entry pathway.

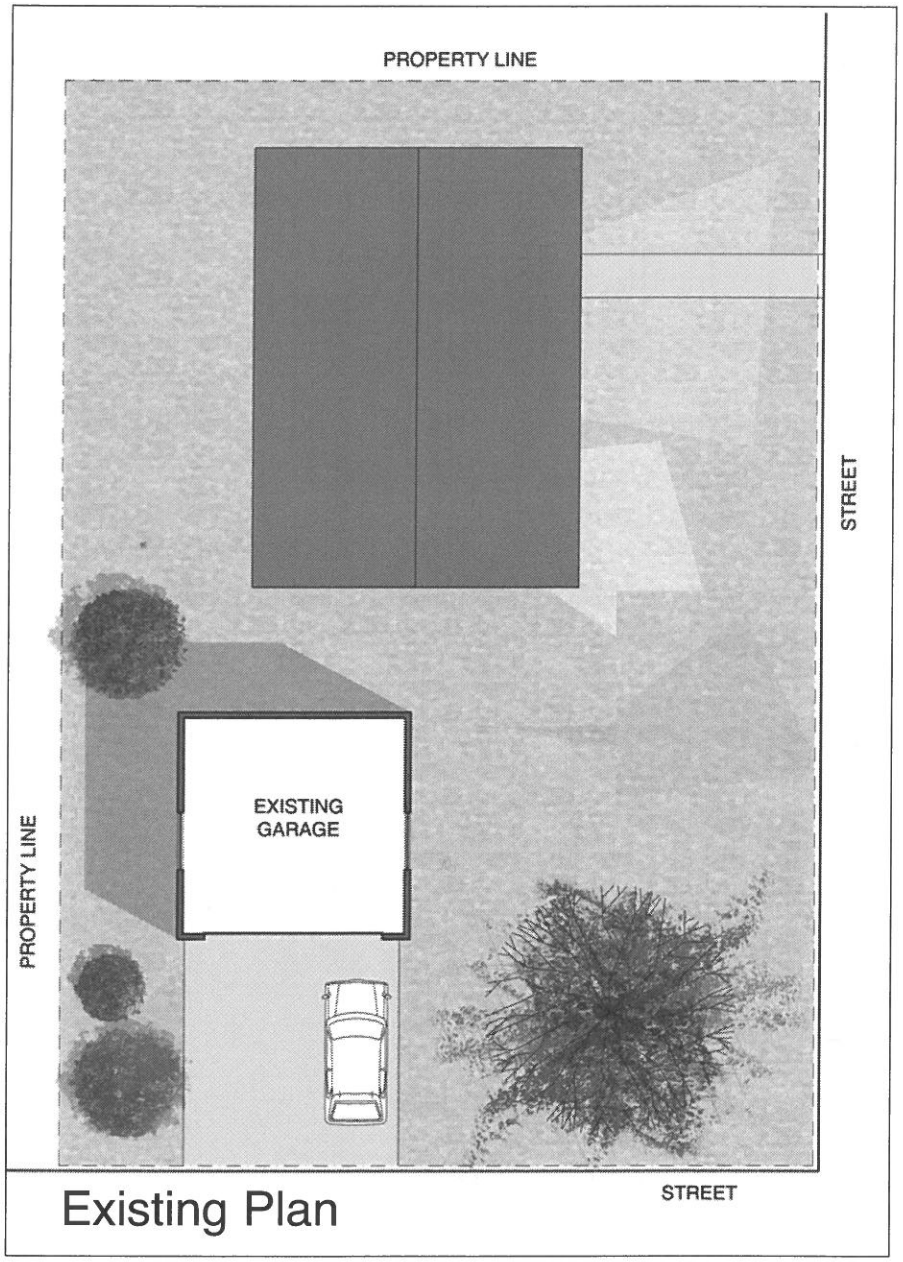
Parking: The driveway is converted from side-by-side parking to three Hollywood driveway parking strips.

Plan: Like the Side Detached unit, other than the entry, the side walls have no openings. All the other doors and windows are placed at the front terrace or the rear patio. With large openings at both the front and back of the combined living room/kitchen, the space appears more expansive.

EXAMPLES ONLY. NOT FOR CONSTRUCTION.



ADU 8: Traditional Corner Detached



Existing Plan

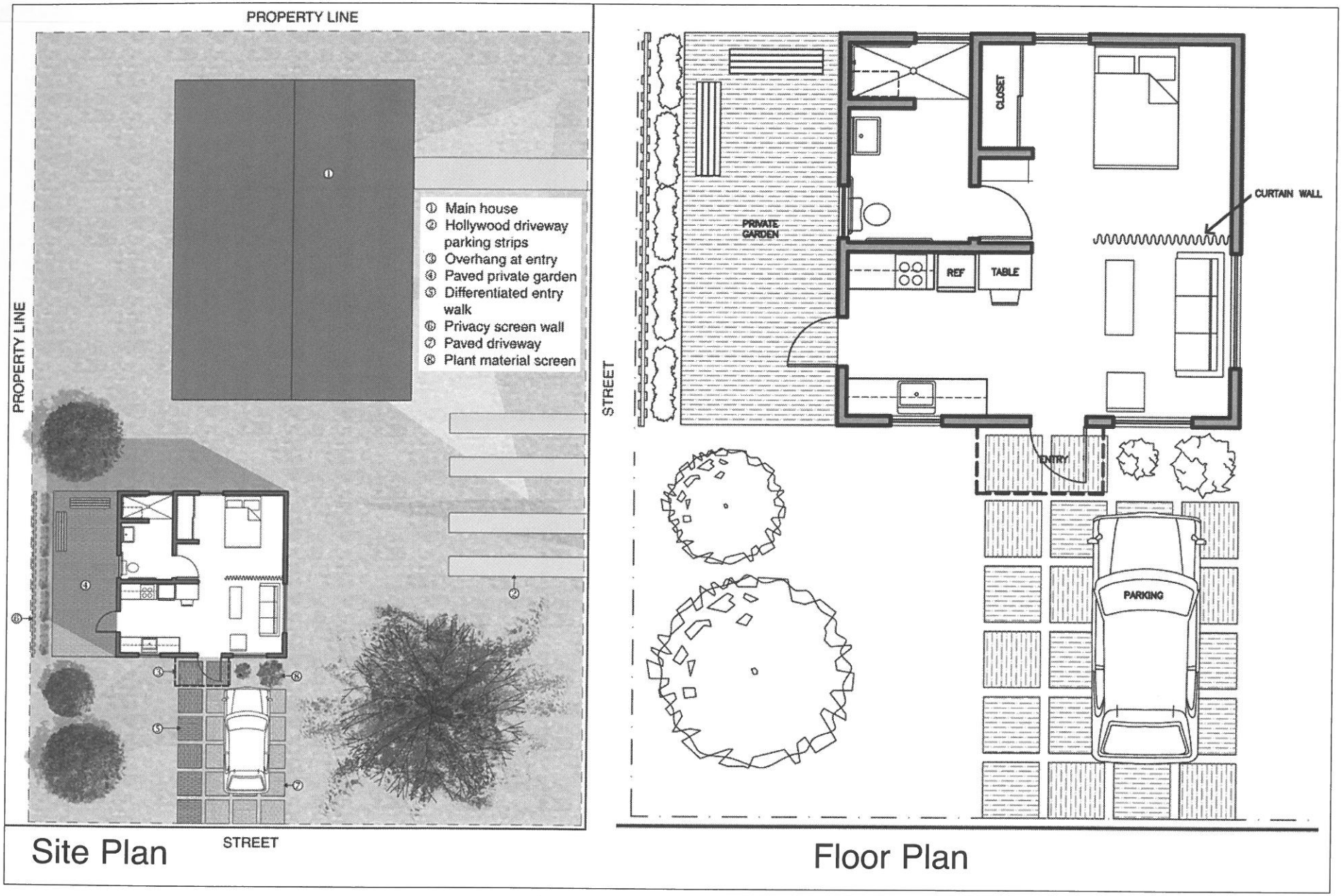
Traditional Corner Detached

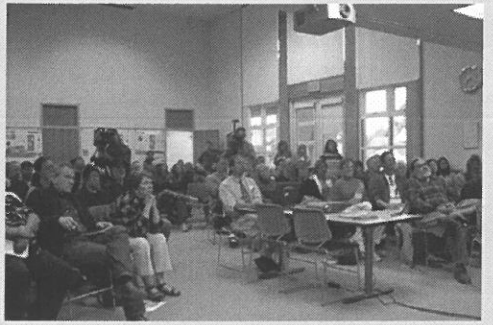
Site: This site includes a detached garage, on a corner lot.

ADU Orientation: The ADU is oriented towards the side street, with its own driveway.

Parking: The driveway is converted to pavers for a single car, while two Hollywood driveway parking strips are added to the front yard of the house.

Plan: This layout provides a generous side yard patio. The front entry walk is designated with a contrasting paving color or material. Like other examples, a curtain can give privacy to the bedroom or pulled aside to offer a larger singular space. The corner orientation allows to great deal of flexibility. Two sides of the ADU face the street, so privacy between adjacent houses is easy to manage. Natural light is abundant and the new dwelling's street identity is easily oriented to the side street of the main house.





Acknowledgements

The Garage Conversion Manual is the result of a partnership between the City of Santa Cruz, the California Pollution Control Financing Authority, and the Santa Cruz community. The Garage Conversion Manual complements the award-winning 2004 ADU Manual and Prototype Designs which was prepared with extensive community participation (above).

City Council
Mayor Cynthia Mathews
Vice Mayor Emily Reilly
Councilmember Ryan Coonerty
Councilmember Tim Fitzmaurice
Councilmember Tony Madrigal
Councilmember Ed Porter
Councilmember Mike Rotkin

Planning Commission
Diane Louie, Chair
Scott Daly
David Foster
Kaitilin Gaffney
Deanna Purnell
Rod Quartararo
William Schultz

City Staff
Greg Larson,
Planning & Community Development Director
Carol Berg,
Housing and Community Development Manager
Norm Daly,
Housing Programs Coordinator
Richard Stubendorff,
Chief Building Official
Alex Khoury,
Principal Planner
Mary Alsip,
Associate Planner

Funding Assistance
California Pollution Control Financing Authority's Sustainable Communities Grant Program

Garage Conversion Manual
RACESTUDIO
Bruce A. Race, FAIA, AICP

Sample Floor Plan Designers
Public Architecture
John Peterson
Arlene Lee
John Cary
Zachary Heineman